22 Pt. Baskerville

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16 Pt. Baskerville

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And euery Man his Ground had sould,
and euery other thinge.
Because the Force of Famins powre
them greeuously did wrynge.
31. And bee the People did remoue,
abrode from Place to Place,
Unto the Cities such as were,
and so in tyme and space
32. They were remou'de from syde to syde,
or to the Borders end
Of Egipt Land, thus Joseph did
abrode the People send.
33. But yet the Land the Preestes possest:
theyrs, Joseph did not buy:
For they vppon King Pharoes charge
continually did lye.
34. And had theyr ordinary foode,
such as the King them gaue,
Wherby they Land they kept vnsold,
and to themselues did saue.
35 Than Joseph to the People sayd,
beholde you see this Day,
I for the King you and your Land,
haue bought, you not denaye,
36. Loe, heere is Seede for you to sow,
goe Eare and Till the Ground,
And of Encrease of Grayne and Corne,
that thereon shalbe found,
37. You shall the Fift part giue therof,
to Pharow for his share,
The rest is youres for Seede to Sowe,
and for your better fare.
38. Now may the saine at will conuert,
to vse for Foode or Meate,
For you and for your Households al,
and Children for to eate.

[a] By this chaunging they signified: that they had nothing of theyr owne but receyued al of the kings Liberalitie.

39 Sayd

39. Sayd they, thou hast our Liues preseru'd,
let vs fatch Grace yet find,
As wee may Pharoes Seruauntes bee,
to do what shalb assignd.
40. Then Joseph made it for a Lawe
remayninge to this Day:
That they the fifte parte of encreafe,
shoulo vnto Pharo pay.
41. And Israell in Egipt dwelt,
as you tofore here tell:
And in the Countrey of Goshen
did Multiply right well.
42. For they therein Possessions had,
and Grew exceedingly,
And Jacob there liu'de Seuentene Yeres,
and then dyd after dye.
43 An hundreth, Forty and Seuen Yeares,
did Jacob liue in al:
And so when as the time drew neere,
that he from Lyfe must fall:
44. He called Joseph vnto him,
and sayd as doth appeare:
Thy Hand now put vnder my Thygh,
and truly to me sweare.
45. If I haue Grace found in thy sight,
Deale truly now with mee,
In Egipt do not Barye mee,
but where my Fathers bee.
46. When I shall sleepe (b) with Fathers myne,
lette me not heere be flaid,
But carey me and burye me,
where Fathers myne are layd:
I wil (sayd Joseph) do in al,
as thou to me hast sayde.
47. Sayd Israel, then Sweare to me:
and Joseph so did Sweare.

Then

[a] Except the Land of the Priests, which was not Pharaoes.

Cap. 50. 7.

(b) Hereby he protested that hee died in that faith of his Father, teaching his children to hoape for the promised Land. Cap. 49. 32.

AA 25

39. Sayd they, thou hast our Liues preseru'd,
let vs fatch Grace yet find,

his Father, teaching his children to hoape for the promised Land. Cap. 49. 32

But carry me and burye me,
where Fathers myne are layd:
I wil (sayd Ioseph) do in al,
as thou to me hast sayde.
47. Sayd Israel, then Sweare to me:
and Ioseph so did Sweare.

Then

TRACTATVS DE GLOBIS ET EORVM VSV,

Accommodatus iis qui Londini editi sunt Anno 1593, *sumptibus Gulielmi Sandersoni* Ciuis Londinensis,

Conscriptus à Roberto Hues.

LONDINI
In ædibus Thomæ Dawson.
1594.

BIBLIOTHECA BODLEIANA

Illustrissimo & honoratissimo Domino Gualtero Raleigh Equiti aurato, præfecto Regii satellitii, operum Stannariorum in Prouincijs Cornubiæ, & Deuoniæ præposito, & *in Comitatu Deuoniæ præsidi* regio, R. H. perpetuam fœlicitatem exoptat.

Nihil simul & natum & perfectum esse (vir illustrissime) inter cæteras res, artes & scientiæ manifestè declarant. Reliquas autem vt mittamus, (omnes enim temporum successione suas ceperunt accessiones) si quis Astronomica veterum scripta, vtpote Arati, & Eudoxi item, (ad cuius mentem Aratum sua Phænomena concripsisse testis est Leontius Mechanicus)

cum Ptolomæi scriptis conferat; quanta in ijs imperfectio, quot errores occurrent? In Geographicis autem antiquorum scriptis, siue inter se cõferas, priores cum subsequentibus, siue cum accuratioribus recentiorum descriptionibus, quàm multa in ijs corrigenda vel supplẽda deprehendas. Eratosthenem Hipparchum, Polybium, Posidonium, grauissmos antiquorum scriptores, longius aberrantes passim insectatur Strabo. Pytheam enim, Euhemerem, Antiphanem, & Indicarum rerum scriptores Megasthenem, Nearchum, Daimachum, à quibus tam multa fabulosè sunt commenta, indignos sua reprehensione arbitratur. Marinum Tyrium, diligentissimum vtcumque scriptorem, Ptolomæus grauiter exagitat. Ipse etiam Ptolomæus licet diligentiâ rerumq; cognitione & vsu cæteris omnibus qui eius tempora antecesserunt, antecellere videatur: si quis tamen eius descriptiones Geographicas cum perfectioribus recentiorum chartis cõferat: bone Deus quàm imperfectus, mancus & mutilus deprehẽdetur? Quis eius errores de Australiori Asiæ & Africæ termino non agnoscat? Borealiora Europæ quã sunt imperfecta? Atque hos Ptolomæi & antiquiorum errores, recentes Lusitanorum & Anglorum nauigationes detexerunt. Australiora Africæ & Asiæ, Lusitani, Borealiora Europæ nostrates diligentissime lustrarunt.

runt. Primo Hugo Willoughby eques Anglus & Richardus Chancelet has oras apperuerunt. Succedit eis Stephanus Borough, vlterius progressi sunt Arturus Pet & Carol. Iackman. Suscepta sunt hæ nauigationes, instigante Sebastiano Caboto, vt, siquâ posset fieri traiectum in regiones Synarum & Cathayæ breuissimum consequeremur. at irrito hæc omnia conatu, nisi quod his medijs firmatum est commercium cum Moschouitis. Hâc cum non succederet, institutæ sunt nauigationes ad Borealiora Americæ, quas primo suscepit Martinus Frobisher, secutus est postea Ioannes Dauis. Ex his omnibus nauigationibus multi antiquiorum errores, magna eorum ignorantia detecta est. Atque his conatibus minus succedentibus, gens nostra nauibus abundans otij impatiens, in alias partes suas nauigationes instituerunt. Humfredus Gilbert Eques, Americæ oras Hispanis incognitas, magno animo & viribus, successu non æquali nostris aperire conatus est. Id quod tuis postea auspicijs (vir honoratissime) felicius susceptum est quibus Virginia nobis patefacta est, præfecto classis Richardo Grinuil nobili equite, quam diligentissime lustrauit & descripsit Thomas Hariotus. Neque hos limites & terminos præfigi suis nauigationibus passi sunt nostrates. Franciscus Drake fretum Megallanicum pertransiens,

occiden-

occidentalem Americæ oram præteruectus Borealia eiusdem Regionis ad 50. vsq; Borealis latitudinis gradum detexit. Huius vestigijs insistens Thomas Candish, non minorem sui nominis gloriam posteris reliquit. Inter hos non numero Ioannem Mandeuil Equitem nostratem qui 300 fere retro annis, terrestri annorum 33. peregrinatione, Indiam, Chinam, Tartariam, Persiam, & confines regiones diligentissime lustrauit. His & huiusmodi nauigationibus perfectum est, vt nostrates cum Lusitanis & Hispanis nauigationis gloria certare posse videantur. Neq; dubium est, ad experientiam quam habent quotidianam, si vel modicum artis Geometricæ & Astronomicæ accessisset, quin multis modis eorum labores & honores superarent. Atque multis persuasum est, minus hactenus effectum esse propter harum scientiarum ignorationem. Eorum autem studijs & laboribus, qui hijs artibus delectantur, vt adiumentum aliquod adiectum foret, Gulielmus Sandersonus ciuis Londinensis magno labore & industria, immodicis suis sumptibus Globos curauit edendos: quantitate & mole maiores, diligentius elaboratos, quam alij omnes qui hactenus editi sunt. Quorum descriptiones Geographicæ ex recentioribus nostratium & Lusitanorum chartis desumptæ, multos aliorum errores manifeste demonstrant: vt

iure

iure pronuntiare liceat, perfectiores nondum esse dituulgatos, vtcunque sequens fortasse ætas quæ in his desiderantur multa deprehendat. De horum Globorum vsu, quantum patitur tenue hoc & ieiunum argumentum, saltem quantum præstare potuit in hoc genere exilis & tenuis mea mediocritas) conscripsi. quos labores meos tuo honori humillime dico consecroque.

Tuo honori addictissimus.

Robertus Hues.

Epistola.

iure pronuntiare liceat, perfectiores non-
dum esse diuulgatos, vtcunque sequens for-
tasse ætas quæ in his desiderantur multa
deprehendat. De horum Globorum vsu,
quantum patitur tenue hoc & ieiunum ar-
gumentum, saltem quantum præstare po-
tuit in hoc genere exilis & tenuis mea
mediocritas) conscripsi. quos la-
bores meos tuo honori hu-
millime dico con-
secroque.

Tuo honori addictissimus.

Robertus Elies.

Præfatio.

DVo sunt instrumentorũ genera quibus totam cœli terræq; faciem mira & multiplici varietate distinctam, quadã quasi synopsi exprimi & sensibus obiici commodissime posse cẽsuerunt artifices. Alterum quod in solido rotundo idæã hanc proponat, Globus vel Sphæra vocatur: Alterum quòd in Plano exprimat, Planisphærium vocarunt. Vtrunq; ab antiquis admodum temporibus excogitatum, ad nostra vsq; secula continua quasi traditione deductum, suas semper per successionem temporis cepit accessiones. Sphæram hue Globum eiusq; vsum Atlantem Libycum primo inuenisse refert Diodor. Siculus, vnde orta fabula, cœlum humeris suis sustinuisse. Alij hoc inuentum Thaleti tribuunt. excoluerunt autẽ postea Crates, cuius meminit Strabo, Archimedes, Proclus, maximè omnium Ptolomæus: ad cuius præcipue mentem & præcepta, sphæras solidas à posteris fabricari solitas Leontius tradit Mechanicus. Recẽtioribus seculis plurimũ excultum est hoc instrumentũ à Gem. Frisio & Gerar. Mercatore, quorum industriæ & diligentiæ magna facta est accessio in his Globis qui Londini editi sunt An. 1593. vt vix quicquam vlterius addi posse videatur. Planisphærium quidem præclarum inuentum mirum habet artificium, si ex Geometricis & opticis fontibus deducta sit fabricatio, miram etiam concinnitatem, suam item iucunditatem habet: sed alterũ illud natura prius & antiquius, forma conuenientius,

intellectui & cogitationi magis accómodum (vt mit
tám venuſtatem & delectationem) proprijs enim &
genuinis formis res ipſas exprimit. Nam cœli formá,
quin eſſet rotunda, vix quiſquam vocauit in dubium.
De formâ etiam terræ vtcunq; multæ apud veteres
phyſicos diuulgatæ ſint opiniones; alijs planam, alijs
cauá, nonnullis cubicam, cæteris pyramidalem cóten-
dentibus: hæc tamen ſola, explosis reliquis, ſummâ
cum ratione obtinuit, vt rotúda cenſeretur. Rotun-
dam autem dicimus, vt habeat ſuas inæqualitates, in
tanta eminentia mõtium & depreſſione valliú. Ter-
ram eſſe formâ Globi, non vt torno facti, ſed qui ha-
Strabo. beat quaſdá inæqualitates dixit Eratoſthenes. Strab.
Plinius. l. 1. Abſoluti orbis figura terræ non ineſt, in tanta
mõtium celſitate & camporum planitie recte Plinius
l. 2 c. 21. Terram cum aqua Globum conſtituere, non
vt cœlum, ſed non multum ab ea forma aberranté,
voluit Strabo l. 1. Aſtruitur etiam rationibus terræ cú
interiecto mari rotunditas. Orientem & Occidenté
verſus Globoſam eſſe probant Sol, Luna & Stellæ,
prius orientalibus, poſterius occidentalibus orientes
& occidentes. Perſæ ad ortum habitantes prius ho-
ris quatuor ſolis radios excipiunt quàm Iberi ad oc-
caſum habitantes. Cleomedes l. 1. Eclipſes (præcipuè
Cleomed. Lunares) euincunt, quæ eodem tempore factæ ijſdem
horis eodem diei tépore non ſunt obſeruatæ, ſed po-
ſterior eſt hora obſeruationis orientalibus quàm oc-
cidétalibus. Eclipſim quæ hora quinta in Arbelis acci-
dit, Carthagini hora ſecunda conſpectá refert Pto l. 1.
Ptolom. Geog. c. 4. In Auſtrú & Boreá quâ vergit, rotunditatẽ
eius demõſtrant occultationes, emerſiones, elationes,

& depreſſiones ſtellarum & polorum. Lucidũ illud ſydus quod in ſummo Argus gubernaculo conſpicuè fulget (Canobus Græcis nominatur) in Rhodo ægrè conſpicitur, aut certe ab editis locis. in Alexandria, quarta circiter ſigni portione ſupra horizontem extante, conſpicuè admodum cernitur, inquit Proclus in fine libelli de Sphæra: lego enim conſpicuè cernitur, non vt vulgò prorſus non cernitur vtcunq; reclamante Græco codice & inuito Latino interprete. In Eclipſibus Lunaribus, quæ fiunt aduentu Lunæ in vmbram terræ) eiuſdem vmbræ extremitates rotundas videmus, quod ab alio quàm rotundo & Globoſo corpore fieri non poſſe probant optici, Vnica hæc ratio maior eſt omni exceptione, quod ex alto mari terram petentibus, primo ſe præbent conſpicienda montium cacumina, radices non niſi cum propius acceſſeris, propter interuenientem terræ gibboſitatem. Caua, cubica, pyramidalis & plana forma propter quas cauſas reiecta ſit: Ptolom. interpres Theon, Cleomedes, vulgati, prope ad vnum, Sphæræ autores, prolixe declarant. Planam terræ figuram, tanquam cramben recoctam ad vſq; nauſeam appoſitam nouo quodam apparatu denuo obtrudit Fran. Patricius, frigidis quibuſdam rationibus & male intellectis experimentis planitiem comprobans, rotunditatem deſtruens. præcipua eius argumenta obiter attingam, neq; enim in eorũ refutatione prolixius inſiſtere noſtrum patitur inſtitutum. Aduerſus terræ rotunditatem facere videntur montium eminentiæ, vallium profunditates, ab æquali camporum planitie. Quis ferat inquit Patricius altiſſimos Norwegiæ

Proclus

montes: Montem ſub polo Slotum mundanorum omnium eminentiſſimum, eiuſdem eſſe ſuperficiei cum ſubiecto mari. Præcipua hæc cum ſit ratio, qua terræ cum interiecto mari rotúditas corruere videatur, minutius paulo diſcutiamus: quantaq; ſit hæc eminentia vt de æqualitate huius Globi detrahere videatur perpendamus. Multa quidem, de altitudine Athûs montis Macedoniæ, Caſij Syriæ, Itemq; alterius eius nominis Arabiæ, & de monte Caucaſo, admiranda & ad fabulam proximè accedentia, ab Ariſtotele, Mela, Plinio, & Solino commemorantur. Inter miracula notarunt quod Athos mons è Macedonia in ſorum Myrrhinæ, in Lemno Inſula oppidi, vmbram proijciat, cum Athos à Lemno 86. milliaribus diſtet. Sed cum Athos mons ad orientẽ Lemno ſit, vt tabulæ indicant Ptolomaicæ, non adeo miramur ad tantam diſtantiam vmbrã iaculari, quoniam oriente vt etiam occidente ſole vmbras longiſſime proijci, quotidiana teſtetur experientia. Hoc fabulis magis annumerárim, quod Plinius & Solinus de eodem monte referunt, adeo elatum eſſe, vt credatur altius quam vnde imbres cadunt ſurgere. Cepit autem (inquiunt) opinio fidem, quia de Aris quas in vertice ſuſtinet non abluitur cinis ſed quo relinquitur aggere manet. Accedunt huc eclogæ è fine 7. lib. Strab. quæ tradunt eiuſdem montis verticem incolentes, videre Solem orientẽ tribus horis ante eos qui mare accolunt. Ariſtoteles Caucaſi montis celſitatem celebrat: quod ipſius ſummitas ad tertiã noctis partem cum mane tũ veſperi radijs ſolaribus illuſtretur. Plinius & Solinus æque fabuloſe de Caſio Syriæ monte refer unt

Mela l.1.c.2
Sol.c.17.
Plin.l.3.c.12

referunt, ſummo vertice à quarta vigilia ortum ſolis oſtendere: quod de Caſio etiã Arabiæ Mela videtur tradere. Hæc autem omnia fabulis annumeranda, Petrus Nonius ex ipſis fontibus Geometricis acutè comprobauit. Ridiculum eſt quod Euſtathius tradit Calpen & Abennam (columnas Hercules dictas) propter celſitatem miraculoſe celebrati à Dionyſio Periegete: neq; tamen aſſurgere vltra 100 vlnas, hoc eſt vnum ſtadium. Arbores Indicas ad maiorem altitudinem excreſcere ſunt qui referunt apud Strab. (ſi qua fide eorum digna ſit relatio.) ferunt enim ad flumen Hyarotidem arborem feciſſe vmbrã Meridianã ſtadiorum quinque. Antiquorum fabulis accedit recentioris ſæculi vanitas. Tenariffem vnam è Canarijs ad 15. Leucarum celſitudinem aſſurgere, quod efficiat milliaria pluſquam 60. ex quorundam narrationibus refert Scaliger. Patricius his non acquieſcens, ad 70. milliaria effert. celebrantur & aliorum montium eminentiæ, vtpote Andium Peruuiæ & Inſulæ Pico Acorenſium, at non æque ac Tenariff. Quam fidem mereantur hæ relationes diſquiramus. Tenariffe quidem adeo exſurgere multorum teſtantur narrationes, vt probabile ſit orbem terrarum editiorem non videre, (ne excepto quidem monte Sloto, quem quiſnam viderit mortalium ignoramus, præterquam quòd de mago quodam Necromantico eo delato fabulantur.) Eam tamen altitudinem attingere non poſſe quam refert Scaliger, maximã fidem facit, quod perpetuas fere niues iugo ſuſtineat. vix enim vno, ſaltẽ altero æſtatis menſe niuibus immunẽ tradunt Hiſpanorum ſcripta. Niues autem generari 70, aut etiã 60.

L. de Crepuſculis.

Euſtathius.

Strabo li. 15.

Exer. 43. contra Card.

milliaribus

milliaribus ſupra aquæ aut terræ planitiem, nunquam perſuadebunt, cum ſummi vapores, ex aſſumpta etiã Eratoſthenis menſura terreſtris ambitus 48. milliaria non attingant: ex Ptolemaica autem menſura vix 41. milliaria adæquant. Cardanus quidem & alij quidã ex profeſſo Mathematici ad 288. vſq; milliaria vapores attollunt: at non mediocri labe ſui nominis has nugas ſcriptis mandarunt. Atlantis montis cacumina ad vſque lunaris circuli viciniam aſſurgere refert Solinus: at ſuum ipſe prodit errorem quod eius verticé niuibus opertum & nocturnis ignibus lucentem fatetur. Non diſſimilia ſunt quæ de eius altitudine Herodotus, Dionyſius Apher, eiuſque Scholiaſt. Euſtathius tradunt: vnde & cœlorum columen vocarunt. Sed vanis ac prodigioſis hijs relationibus obmiſſis, accedamus ad ea quæ maius fidei argumentum præ ſe ferunt. Eratoſthenes inſtrumentis dioptricis, ex dimenſis interuallis, deprehendit perpendiculũ ductũ à ſummi montis cacumine ad imas valles non eſſe maius ſtadijs 10. Cleomedes refert non inueniri montem editiorem ſtadijs 15. Theſſalicorum montium cacumina arrectiora eſſe quam vſquam proceritis montana attolli valeat tradit Solinus. at, ſi Plinio credimus, Dicæarchus regum curâ montes permenſus, deprehendit Pelion cæteris excelſiorem non exſurgere vltra paſſus 1250. hoc eſt ſtadia 10. At vlterius progrediemur, ne reſtrictiores in his videamur eſſe, aut arctioribus quam par eſt limitibus definire. addemus ſummitati montiũ maris profunditatẽ. De ea ſic ſcribit illuſtriſſimus Iul. Scaliger exercit 38. cõtra Cardanũ, Aquæ profunditas non multa, nẽpe raro

paſſus

Card. de ſubt. Theod. Wim. par. 2. ſpher. queſtionum.

Theon 1. com. in. Ptol.

l. 1. c. 63.

passus excedit 80. plurimis in locis non accedit ad vicenos, haud paucis senos explet, pauciſſimis ad centenos accedit, paucioribus hunc ſuperat numerum. At quia hæc à vero deficere plurimum, quotidiana nauigantiũ teſtatur experientia, depreſſionem hanc fundi maris faciamus æqualẽ montiũ elationi, vt ad 15. etiã ſtadia ſubſideat: ſic enim volunt Cleomedes, & Fabianus apud Plin. l. 2. c. 102. (Georgius valla mala fide Cleomedem transfert cum 30. ſtadiorum menſuram profunditati Maris attribuit.) His ita aſſumptis fundamentis videamus quæ ſit ratio eminentiæ montiũ ad totius terræ diametrum, vt inde colligamus montium elationes vix quicquam à rotũditate detrahere, ſed erit hæc excreſcentia quaſi feſtucæ aut puluiſculi in pila vt Cleomedes affirmat. Si enim accipiamus ambitum terræ eſſe ſtadiorum 180000. vt Ptolomæo placet, (neq; minorem menſuram quiſquã antiquorũ poſuit, vt Strabo teſtatur) erit eius dimitiens (ex Archimedea ratione diametri ad periferiam) ſtadiorum amplius 57272. Si igitur montes exlurgant ad vſque ſtadia 10. (quod placuit Eratoſtheni & Dicæarcho) erit ratio editioris montis ad diametrũ terræ quæ eſt vnius ad 5727. (lapſus eſt Peucerus cum dixerit, dimetientis terræ ad perpendiculum 10. ſtadiorum eſſe rationem 18000. ad vnum. hæc ratio eſt ad totam circumferentiam non ad diametrum.) Si ad 15. ſtadia altitudo montium excurrat (vt voluit Cleomedes) erit ea ratio quæ eſt vnius ad 3818, ſed ad 30. etiam ſi placeat ſtadia montes emineant, (neque maiorem eſſe menſuram ſummi montis adiecta etiam maris profunditate, ad perpendiculum, Cleomedi videtur) ratio

Cleom.
Plinius.

tio

tio eâ non erit maior quam sit vnius ad 1908. Assurgat etiam si libet ad quatuor milliaria siue stadia 32. (quantum Casium Syriæ in directũ surgere autor est Plinius) erit ea ratio aliquantò minor, quam sit vnius ad 1789. Tantum igitur abest vt credam Patricio de altitudine Tenariff. 72. milliariorum, nisi multis ambagibus & obliquis itineribus metiatur: quomodo Plinius Alpium cacumina ad 50. milliaria effert) vt non assentiar Alhazeno Arabi (qui ad 8. milliaria Arabica vel stadia 80. extulit montium cacumina) vix Plinio de altitudine 4. milliariorum, vlterius assurgere dicenti Mercurio haud facile crederem. Hactenus de montium celsitate quæ huius Globi terrestris rotunditatem impedire videbatur.

L. 2. c. 65.

L. de Crepusc.

Adiungit Patricius aquas etiam in sphæræ modũ non rotundari argumentũ sumit ab aquarum libratoribus qui adhibitis instrumentis dioptricis aquas esse æqua & plana superficie (nisi quatenus ventis agitantur) deprehendere. Eratosthenes contrà apud Strabonem affirmat superficiem maris alibi eminere, aliâs subsidere. inscitiæ suæ testes vocat item architectos siue aquarum libratores, qui Demetrio Isthmum Peloponesiacum effossuro, renuntiarunt: comperisse se dimensionibus, mare quod est in sinu Corinthiaco elatius esse eo quod ad Cenchreas. Sesostrim Ægypti regem Isthmum Arabicum discissurum destitisse serunt, quòd superficiem aquæ in Arabico sinu sublimiorem iudicaret, quam quæ in mediterraneo mari. Arist. in fine libri 1. Meteororũ. Idẽ postea Dario contigisse, eodem loco testis est idem Arist. Ecquid Sesostris, Darij & Demetrij Architecti maiori fide digni

Aristot.

sint,

sint,quam quos Patricius nominat non laboro, Strabo Eratoſt. inſectatur quòd eminentias & depreſſiones ſuperficiei maris attribuit. Archimedes docet omnis humidi quod conſiſtit & parmanet ſuperficiẽ eſſe Sphæricã, & habere cum terra cõmune centrũ; vt vtroſq; merito reijciamus,tum qui rectã maris ſuperficiem volunt,tum qui eminentiam & ſubſidentiam tribuunt. Hoc vnum fateamur ratio cogit, exiguam huius Globi portionem,quantam capiat oculorũ acies,à recta ſuperficie quibuſuis inſtrumentis nõ poſſe diſcerni : vt inde penitus corruat argumentum illud quod à libratorum fide & experientia deducit Patricius. Eleuationes & depreſſiones,occultationes item & emerſiones Polorũ & ſtellarum quẽadmodũ quotidiana nauigantiũ experientia teſtatur,fieri poſſe vtcunq; plana ſit aqua contendit Patricius. Si enim ſtella aliqua,alicuius loci vertici immineat : hac aut illac ab eo loco ſi diſceſſeris, deprimi videbitur, in plano etiam facto itinere.at aliud eſt quod nõ aduertit Patricius, æquali curſu confecto verſus auſtrũ aut Boream; ſtella ſemper æqualiter eleuatur aut deprimitur,quod fieri poſſe in recta ſuperficie nunquã docebit.ſi ſumamus ſtellam aliquam prope æquatorem poſitam, ea in curſu 60. milliariorũ noſtratiũ proximè,per vnum gradũ ab horizonte attollitur, ſiue ea ſtella vertici immineat,ſiue inde diſceſſeris vt à vertice deprimatur per triginta,quinquaginta gradus aut alio quouis numero : quod in plano fieri non poſſe Geometrica demonſtrant fundamenta. Vnum hoc Patricio (in Hiſpanorũ nauigationibus bene verſato, quod teſtantur eius ſcripta) fidem facere poterat, maris

De iis quę veh in aqua.

ſuperficiem non eſſe rectam: quod Victoria nauis ea qua Fernandus Megallanes ex Hiſpania ſoluit, inſtituto curſu inter Auſtrum & occidentem ad Fretũ illud quod ab eo momen accepit; redijt in Hiſpaniam præteruecta Promontorium Bonæ ſpei, toto terrarũ ambitu enauigato. Mitto illuſtriſſimorũ noſtratiũ nauigationes D. Fran. Drake, & Thomæ Candiſh exteris fortaſſis non adeo notas quæ id ipſum quod dicimus euincunt. Obiter attigimus quæ ſumma habet ſuæ cauſæ fundamenta Patricius. Experimenta quæ male intellecta ad cauſam ſuam firmandam adducit omitto, cum eius opinionem deſtruant potius quam aſtruant. Aſtructa ad hunc modum rotunditate terræ. Cum altiſſimorum montium eminentiæ, vix habeant eam rationem ad ſemidemetientem terræ, quam vnum ad mille (quæ quam ſit exigua facile quiuis agnoſcet) Globoſam formam ad exprimendã cœli terræq; imaginem naturæ conuenientiorem, intellectui faciliorem, ipſaq; venuſtate iucundiorem, otioſum arbitramur vt probare contendamus. In Globis autem materialibus præter aptam & conuenientem locorum delineationem, quod præcipuum eſt, duo maxime deſiderantur, magnitudo ſiue capacitas, vt particulares quam fieri poteſt locorum deſcriptiones cõplectantur. Secundum eſt leuitas, ne pondere & grauitate offendant. Strabo lib. 2. Globũ voluit diametri 10. pedum vt capiat mediocrem rerum particularium deſcriptionem. Immanior plane eſt hæc moles quàm quæ commode tractari poſſit. atqui hac ex parte, exiſtimo hos Globos, de quibus tractare inſtituimus, cæteris omnibus qui hactenus editi ſunt

iure præferendos, quod & capaciores reliquis: sunt enim diametri pedum $2\frac{1}{6}$, ij autem quos Mercator edidit (quibus maiores nemo ad hæc vsque tempora quod sciam, edidit) pedem $1\frac{1}{5}$ vix attingũt diametri. erit itaque superficiei horum Globorum ad eos quos Mercator edidit, ea ratio quæ est vnius ad $2\frac{1}{6}$ aliquanto etiam maior, quælibet igitur regio in his Globis erit maior quã in illis duplo amplius: vnde quælibet loca facilius multo in his delineari possunt quam in illis. Sed hæc intelligenda volumus, de ijs qui maiori forma editi sunt à Gulielmo Sandersono ciue Londinensi, (de quorum præcipue vsu conscripsimus hunc tractatum.) Nam & minores etiam edidit, vt mole & magnitudine minores, sic etiam pretio viliori vt tenuiorum studijs consultum esse videatur. Ad ipsam quod spectat Geographiam, cum ex recentioribus chartis & descriptionibus sit desumpta, cæterorum descriptionibus multo perfectiorem arbitramur: vtcunq; suis fortassis non vacat erroribus hoc autem in his Globis edendis præstitum esse eorum artifex mea opinione gloriari poterit. Vnum hoc monemus, particularium locorum descriptiones aliunde petendas esse, neque enim in Globis hoc expectandum est. In particularibus autem locorũ descriptionibus, Abrahamus Ortelius in Tabulis Geographicis cæterorum industriam & diligentiam superasse videtur. Hinc itaq; commodissime peti posse ducimus.

Summa huius Tractatus capita.

PRefatio, vbi antiquitas, & præstantia Globorum præ ceteris instrumentis indicatur, eorum forma præstantissima ad cœli & terræ imaginem exprimendã. rotunditas terræ contra Patricij deliramenta astruitur. Montium celsitudo quantum detrahat rotunditati terræ,

Pars prima.

QUid Globus, quæ eius partes & de circulis extra Globum. quid horizon. quæ in materiali Globorum horizonte describantur. quid meridianus. quid poli & azis, quid Cyclus & Index horarius. Cap. 1.

De circulis qui in Globorum superficie delineantur, quid æquator siue æquinoctialis, quid dies tum naturalis tum artificialis, item horæ æquales & inæquales. Quid Zodiacus & ecliptica. Quid annus. eius spatiũ indeterminatum, multorum de eo sententia, multorum item errores. Quid æquinoctium & solstitium. eorum sedes mutata, & antitipatio in Calendario multis obseruatis confirmata. Sosigenis & Iulij Cæsaris error in æquinoctio designando. Coluri quid. Stellarum fixarũ longitudines & declinationes mutatæ obseruatis probantur. Ptolomæi locus 7. c. l. 1. Geograph. ab iniurijs interpretum vindicatus & Strabonis autoritate confirmatus. Quid Tropici, eorum declinationis mutata narratio. Quid circulus Arcticus & Antarcticus. quid

verti ca-

verticales circuli & quadrans altitudinis, cap. 2.
De Sphærâ parallelâ, rectâ, obliquâ, & earum affectionibus. Cap. 3.
De Zonis & earum numero antiquiorum de Zonarum qualitate deliria antiquis testimonijs & recenti experientia reiecta. Cap. 4.
De Amphiscijs, periscijs, & heteroscijs. ca. 5.
De Perioecis, Antoecis, Antipodibus & eorum comparatione. Cap. 6.
De Climatibus & Parallelis. Cap. 7.

Secunda pars.

De ijs quæ propria sunt cœlesti Globo, vtpote de stellis: ac primo de planetis siue errãtibus. C. 1.
De stellis fixis & earũ efformationibus. C. 2.
Hemisphærij Borealis constellationes. Cap. 3.
Zodiaci signa ac primum Borea. Cap. 4.
Hemisphærij Austrini effigies, ac primo quæ in Zodiaco. Cap. 5.
Hemisphærij Australis constellationes extra Zodiacum. Cap. 6.
De stellis in Globo non expressis. Cur stellæ interdum plures aliâs pauciores, quandoq; maiores sæpius minores conspiciantur inepta quorundam rationes refutantur, Americi Vespuccij Cardani & Patricij deliramenta, de inusitata magnitudinis stellarum Austrini orbis, nostrâ experientiâ reiecta. Cap. 7.

Pars tertia.

De Geographica descriptione Globi terrestris

ſtris & partibus terræ cognitæ. Ptolomæi errores de Auſtrali Africa & Aſia, itemq; Boreali Europæ termino, ex Antiquorum ſcriptis, & recentiorum variâ experientiâ damnantur. Cap. 1.

De ambitu terræ & menſurâ vnius gradus variæ opiniones Græcorum Eratoſthenis, Hipparchi, Poſidonij, Cleomedis, & Ptolomæi: diuerſæ Arabum: item Italorum, Germanorum, Anglorum & Hiſpanorum. Poſidonius & Eratoſthenes ex ſuis ipſorum obſeruatis & aſſumptis reijciuntur. Ptolomæi ſententia cæteris prælata, à Maurolyci calũnijs liberatur. Maurolycus taxatur, quod perperam fanens Poſidonio, iniquè damnauit Ptolomæum. Cap. 2.

Pars quarta.

De inueniendâ longitudine, latitudine, diſtantia & poſitionis angulo vel ſitu locorum in terreſtri Globo expreſſorum. Cap. 1.

De latitudine locorum. Cap. 2.

De diſtantia duorum locorum & angulo poſitionis vel ſitu inueniendo. Cap. 3.

De altitudine Solis aut Stellarum. Cap. 4.

De inueniendo Solis loco eiuſq; declinatione ad diem datum. Cap. 5.

De inueniendâ loci latitudine ex obſeruatâ Meridianâ altitudine Solis aut ſtellarum. Ca. 6.

De Aſcenſione recta & obliqua Solis & ſtellarum inueniendâ, ad datam quamlibet loci latitudinem & tempus. Cap. 7.

Quomodo inueniatur ad datum tempus & locum

locum differentia horizontalis inter Meridianum, & circulum verticalem Solis aut Stellæ alicuius, quam vocant Azimuth. Cap. 8.

De inuenienda hora itemque amplitudine ortus, & occasus Solis & stellarum ad datum tempus & latitudinem alicuius loci. Cap. 9.

De triplici ortu & occasu stellarum. Cap. 10.

De inueniendo crepusculorum initio & fine ad datum quoduis tempus & latitudinem loci. Cap. 11.

Quomodo ad datum aliquod tempus & locum inueniatur quantitas diei artificialis aut noctis, vel quantitas paralleli Solaris quæ supra horizontem manet, quaque infra latet, idem etiam de stella aliqua inuenire. Cap. 12.

De inuenienda hora diei & noctis tam æquali quam inæquali ad datum quoduis tempus & latitudinem loci. Cap. 13.

De inuenienda longitudine latitudine & declinatione stellarum fixarum vt in globo exprimuntur. Cap. 14.

De inuenienda deflectione acus magnetica à veri mèridiani situ, quam vulgo vocant nostrates compassi variationem, ad datam quamuis latitudinem. vbi multorum errores deteguntur, qui assignarunt acui magnetica certum aliquem meridianum, & fixum aliquod punctum quod respiciat & intueatur. & qui æquabilem faciunt ac regularẽ huius deflectionis mutationem. horum autem vana coniectura, & male assumpta hypotheses, ex certioribus tum nostris tum aliorum

lierum obseruatis refelluntur. Cap. 15.

Quomodo per Globum construatur horologium sciotericum, ad datam quamlibet loci latitudinem. Cap. 16.

Pars vltima.

De Rumbis in terrestri Globo delineatis, vbi eorum natura, origo & vsus in nauigandi ratione tractatur.

Postremo est tabula Geographica in qua Regionum, Insularum, fluuiorũ, Promontoriorum, Sinuum, Montium, & reliquorum quæ in terrestri Globo exprimuntur, nomina omnia ordine Alphabetico digesta sunt: adiectâ singulis suâ longitudine & latitudine.

Prima pars de ijs quæ communia ſunt vtriſque Globis.

Quid Globus, quæ eius partes, & de circulis extra Globum. Cap. 1.

GLOBOS, quod ad noſtrum ſpectat inſtitutum, vocamus, Analogicas cœli terræq; imagines. Analogicas autem dicimus non ſolum propter formam, quia Rotũdi, vt ſunt cœlum, & terra cum interfluo Mari: ſed præcipuè quia cœli ſydera ſuis imaginibus & Aſteriſmis (Conſtellationes vocant) expreſſa, terræq; tractus & regiones, ſingula ſuâ proportione, magnitudine, & diſtantiâ expreſſa, nobis exhibent: delineatis etiam ad eorum vſum circulis tum maioribus tum minoribus quos in cœlo terráq; congruè ſuis obſeruatis conceperunt artifices. Circuli autem maiores ſunt qui totam Globi ſuperficiem in æquales duas portiones diſpeſcunt: Minores qui in duas inæquales dirimunt. *Globus quid.*

Præter ipſa Globorum corpora, in quibus ea quæ diximus inſcripta ſunt, quæ Solida ſunt rotunda, adhibetur vtrique machina cum inſtrumentis quibuſdam neceſſariis ad eorum vſum; quorum ſingula ordine explicabimus. Machinæ fabrica ſic habet. Primo baſis eſt ad Globorũ ſuſtentationem, cui ad libellam eriguntur ſex columellæ, æqualis ad inuicem longitudinis, quibus inſiſtit cyclus annulatis bene craſſus & latus, baſi parallelus, quem horizontem

zontem vocant, quod eius superficies, quæ supera est, veri horizontis officio fungitur. Hæc enim ita est fita vt Globi superficiem in duas æquas partes dirimat. Quarum altera quæ eminet conspectam mundi partem nobis indicat : altera quæ deprimitur, inconspectam mundi partem denotat. Is autem circulus qui conspectam mundi partem ab inconspicua dirimit horizon vocatur. Atque illud punctum quod in supero hemisphærio vertici imminet æqualiter vndiquaq; ab horizonte semotum , Zenith vulgò vocatur: Arabes Semith vocant, sed corruptum illud nomen obtinuit vt vulgo reciperetur. Huic è regione in infero hemispærio quod opponitur, Nathir vocant Arabes, vulgo Nadir. Hæc duo puncta Poli horizontis dicuntur.

Horizon.

In horizonte Globi materialis hæc adscribuntur ad oram. Primo duodecim Zodiaci signa , quodlibet ex his in triginta minutiores partes diuiditur, vt totus Horizon in 360. partes (quos gradus vocant) dirimatur. Si gradus autem in 60. etiam partes diuisus concipiatur , quælibet earum scrupulum vel minutum dicitur, & ex simili minutorum diuisione fiunt secunda, dehinc tertia, itémq; quarta & quinta, &c ex simili semper partitione. Adscribitur item huic horizonti Calendarium Romanum, atque illud triplici forma, Antiqua, quæ etiamnum apud nos in vsu. Recenti, à Gregorio 13. Papa instituta qua æquinoctia & solstitia restituuntur ad eas sedes quas tépore Concilii Niceni tenuerunt, Tertium restituit eadem æquinoctia & solstitia ad sedes quas obtinuerunt tépore natiuitatis Christi. Calendarii menses

diuiduntur in dies & ſeptimanas quibus adiiciuntur Characteres earum iudices, nempe 7. priores literæ Alphabeti Romani. qui modus deſignandi menſium dies introductus eſt poſt tempora Concilii Niceni autore Dionyſio exiguo Abbate Romano. Extima horizõtis ora in 32. partes diuiditur pro numero Ventorũ quos recentiores Nautæ in nauigationibus obſeruant, quibuſq; cœli plagas & regionum tractus ſolent deſignare. Antiquiores enim 4. ventos numerabant: ſequuti, eis præterea quatuor adiecerunt: deinde numerabant 12, poſtea introducti ſunt 24. vt Vitruuius docet, recentior ætas 32. numerat, quorum nomina Anglica itémque Latina in horizonte Globorum materialium exprimuntur.

Huic horizonti in duplici fiſſura circulus æneus inſiſtit ad rectos angulos, ita vt hâc illâc per eaſdem fiſſuras circumduci queat vt vſus poſtulat: hic vocatur Meridianus quia altera eius ſuperficies, quæ in gradus 360. (vt & horizon) diuiditur, veri meridiani vicem ſuſtinet. Eſt autem meridianus circulus maior tranſiens per polos mundi itémque horizontis, quem cum Sol attigerit, diurna reuolutione, in ſupero hemiſpærio, medios dies: cum in infero, medias noctes efficit. *Meridianus.*

Hi duo circuli Horizon & Meridianus in cœlo terráq; varii ſunt & mutabiles pro locorum mutatione. Sed in Globis materialibus facti ſunt ſimplices, conſtantes & inuariabiles. Terra autem facta eſt volubilis, vt eidem meridiano omnium locorum vertices applicari poſſint.

Axis.

Duobus huius Meridiani punctis oppositis affixæ sunt, extremitates stili per Globi soliditatem eiusq; centrum traiecti. Harum extremitatum alterã polum mundi Boreum siue Arcticum: Alteram Austrinum vel antarcticum, Ipsumq; stilũ axem vocant mundi. Axis enim mundi est dimetiens ipsius circa quam voluitur. Axis extremitates poli sunt.

Poli Boreus & Austrinus.

Cyclus horarius.

Alterutri polorum cum postularit usus adiungendus est circulus minutior & ipse æneus in 24. æquas partes diuisus pro numero horarum integræ diei & noctis. Ideoq; circulum nominant horarium. Hunc alterutri polorum ita oportet applicare vt sectio vtriusq; horæ duodecimæ tum mediæ diei tum mediæ noctis, veri meridiani superficiei exactè congruat.

Index horarius.

Extremitati axis per centrum horarii circuli transeuntis adiiciendus est stilus minutior, quem Indicem vocant horariũ, qui sic fabricatus est vt volutato Globo stilus axi adhærens per omnium horarum sectiones percurrat. Hunc indicem licebit circumquaq; mouere, & ad singulas horas horarii circuli eius cuspidem vt libuerit applicare.

De circulis qui in Globi superficie delineantur. Cap. 2.

Æquator.

SEquuntur circuli in ipsa Globi superficie descripti. Primò æquali ab vtroq; polo distantia siue 90. graduum interuallo delineatur maior circulus qui vocatur æquinoctialis vel æquator, ideo quia cum

Sol

Sol in hoc circulo conſtituitur, dies noctibus vbique locorum adæquat. Huius circuli reuolutione definitur dies naturalis νυχθήμερον. Eſt enim dies duplex Naturalis & Artificialis. Naturalis eſt ſpatium quo integra æquatoris periodus abſoluitur, & eſt 24. horarum. Artificialis eſt ſpatium quo Sol ſuperũ percurrit hemiſphæriũ cui nox opponitur tecũ ſcilicet Sol in infero fertur hemiſphærio. Artificialis dies eiuſque nox æquatur diei Naturali.

Dies Naturalis.

Artificialis.

Diei partes horæ ſunt, quæ vel æquales vel inæquales. Aequalis eſt 24. pars diei Naturalis, quo tempore 15. æquatoris gradus ſupra horizontem emergunt & deprimuntur. Inæqualis eſt 12. pars diei Artificialis, inter orientem & occidentem Solem. Horarum partes ſunt Minuta. Minutum eſt pars 60. horæ æqualis, quo tempore ſemiſſis vnius gradus æquatoris ſiue minuta 30. oriuntur & occidunt.

Horæ æquales. Inæquales

Aequatoré in duobus punctis oppoſitis obliquè ſecat circulus etiã maior qui Zodiacus nominatur. quem in 12. partes (quæ ſigna vocant) diuiſum cernimus. Harum quælibet in 30. rurſus minutiores partes ſecatur, vt totus Zodiacus (ſicut reliqui etiam circuli) gradus complectatur 360. Primam partem 12. ab altera interſectionum Aequatoris & Zodiaci, ab occidente ortum verſus numerando, Aries occupat, ſecundam Taurus, &c. Sed dubitare iure poterint rerum Aſtronomicarum imperitiores, propter quam cauſam primi triginta gradus, vel prima pars 12. totius Zodiaci, tribuantur Arieti, cum prima ſtella imaginis Arietis, non minus 27. gradibus ſequatur interſectionem æquatoris & Zodiaci. Cauſa hæc eſt.

Zodiacus.

Antiquiorum

Antiquiorum Græcorum temporibus, qui primi stellarum fixarum loca & sedes obseruarunt, easque suis Asterismis expressérunt, prima Arietis stella ab ipsa intersectione vix modico interuallo distabat. Nam Thaletis Milesii ætate duobus gradibus antecedebat intersectionem. Metonis Attici tempore in ipsa stetit intersectione. Timocharis æuo duobus gradibus sequebatur. Ob hanc propinquitatem, primam partem Zodiaci antiquiores dederunt Arieti, secundam Tauro, & reliquis suo ordine. eorũ traditionem qui subsecuti sunt ad nostra vsque tempora retinuerunt.

Sub hoc circulo Sol reliquiq́ue Planetæ suos motus peragunt, suo quisq; modo & tempore periodũ absoluens. In medio Zodiaci spatio Sol suum iter peragit, ad eius cursum ecliptica describitur: cæteri ab ecliptica, siue Solis cursu, suas habent in latitudinem aberrationes, propter eorum digressiones Zodiaco latitudo tribuitur apud antiquiores graduum 12. recentiores propter Martis sed præcipuè Veneris euagationes binos vtrinque gradus adiecerunt, vt tota eius latitudo gradibus 16. definiatur. Sed ecliptica sola in Globis delineatur eaq; in 360. gradus diuisa vt reliqui circuli. Hanc Sol annuo motu percurrit, singulis diebus gradum fere vnũ conficiens, hoc est 59. minuta, 8. secunda, bis æquatorem pertransit, indeque æquali vtrinq; interuallo discedit. Cum æquatorem pertransit, in principio Arietis & Libræ cõstitutus, fiunt æquinoctia, & dies nocti æquatur, Cũ lõgissimè ab æquatore discesserit & initiũ Cancri aut Capricorni attigerit, solstitiũ fit

& Antiquiorum

& Bruma. Aliam ſcio mentẽ (at ab alia cauſa) Vitruuio, Plinio, Theoni Alexandrino, Cenſorino, & Columellæ, cum docent æquinoctia fieri ſole percurrente octauum gradum Arietis & Libræ: ſolſtitium & Brumam cum octauum item gradum Cancri aut Capricorni occupauerit. Hi enim ſolſtitia definierunt retroceſſione vmbrarũ gnomonum: vmbra autem non percipitur retroagi, vt Theon docet, antequam Sol octauum gradum Cancri aut Capricorni attigerit. Hinc etiam æquinoctia octauis gradibus Libræ & Arietis tribuerunt. *C. 2. frag. quod cenſor. adiungitur.*

Spatio quo Sol Zodiacum percurrit Annus definitur, eſt autem illud dierum $365\frac{1}{4}$. paulo minus. Accuratum enim huius periodi tempus qui quærunt fruſtra quærunt. Inæquali enim tempore abſoluitur. Magna de hoc tempore controuerſia inter antiquiores, nondum apud recentiores definita. Philolaus Pythagoræus ſtatuit dierum 365. Reliqui omnes huic tempori aliquid adiecerunt. Harpalus definiuit diebus $365\frac{1}{2}$. Democritus $365\frac{1}{4}$. & $\frac{1}{164}$. Oenopides diebus 365. horis 9. fere. Meton Atticus ſtatuit anni quantitatem dierũ 365. h. 6 m. 19. fere. Poſt hunc Calippus ad dies $365\frac{1}{4}$. reduxit, quem ſecuti Ariſtarcus Samius & Archimedes Syracuſanus, ad eorum mentem Iulius Cæſar deſcripſit annum ciuilem, edoctus (inquit Dion) ab Alexandrinis: adhibito, (vt ferunt) in conſilium Soſigene Peripatetico magni nominis mathematico. At maiorem iuſto anni quantitatẽ hi omnes præſcripſerunt præter Philolaum qui defectu aberrauit. Minorem enim diebus $365\frac{1}{4}$. euincunt accuratiores omnes omnium tem- *Annus.* *Ioſeph. Scal. de Em. temp.*

porum

porum & artificum obſeruationes. At quantò hoc ſpatium excedat iuſtam anni quantitatem non eſt adeo facile explicatu. Hipparchus eũq; ſecutus Ptolomæus voluerunt eximendam $\frac{1}{300}$. partem diei, vt non recte monuerit Iacobus Chriſtmannus annum Tropicum ex Hipparchi & Ptolomæi ſententia conſtare diebus 365. $\frac{1}{300}$. parte. Statuunt enim hii minorẽ diebus 365. $\frac{1}{4}$. diei vnius trecẽteſima parte vt patet 2.c. 1.3. Almag. Ptolomæi, & ipſe Chriſtman, alibi rectẽ aduertit. Hanc anni quantitatem iuſtam perpetuam & immutabilem voluit Ptolomæus : néque Hipparchi de inæquali periodi ſolaris reſtitutione obſeruata, contrarium perſuadere poterant. At eorum qui ſecuti ſunt obſeruationes cum Hipparchi & Ptolomæi obſeruatis collatæ contrarium probant. Albategnius adimit $\frac{1}{106}$. partem diei. Indi & Iudæi partem $\frac{1}{120}$. Perſæ $\frac{1}{115}$ ad quorum mentem Meſſalah & Albumaſar conſcripſerunt tabulas medij motus ſolis. Azaphius, Auarius & Arzachel dixerunt exceſſum hunc eſſe $\frac{1}{136}$. partis diei. Alfonſus eximit $\frac{1}{122}$. partem diei. Alij $\frac{1}{128}$. Alij $\frac{1}{130}$. demunt. Qui nuper Calendarium Romanum reſtituerunt $\frac{1}{133}$. partem fere eximendam voluerunt 400. annis 3. dies integros accreſcere arbitrati. Cõpernicus $\frac{1}{115}$. partem diei huic tẽpori deeſſe deprehendit ſi Rectè igitur Cenſorinus ait, annum complecti dies 365. & portionem neſcio quam aſtrologis adhuc inexploratam.

Ad c.15. Alfrag.

Cenſor. c.22.

Dion. l.43. Ex hijs Dion erroris planè ridiculi conuincitur; qui in annis 1461. Iulianis arbitratur diem integrũ deficere ad iuſtam anni quantitatem, quem intercalandum

landum vult vt annus ciuilis Iulianus accurate congruat ſolaribus reuolutionibus. Grauius etiam aberrat Galenus, magnus ille medicorum princeps, qui arbitratur annum eſſe dierum 365. ¼. & præterea partis cuiuſdam propemodum centeſimæ, vnde in ſingulis annis centeſimis ſequeretur noua intercalatio integræ diei. *l. 4. c. 3. progn.*

Quoniam autem annus Iulianus (qui à Iulio Cæſare inſtitutus, & poſt eius tempora receptus, hodie eſt in vſu) aliquanto maiorem iuſto quantitatem obtinet, hinc fit vt æquinoctia & ſolſtitia antiquas in Calendario ſedes anteuerterint. Annis circitur 432. ante incarn. Chriſti, æquinoctium vernum à Metone & Euctemone obſeruatum, in 8. Kal. Aprilis vel 25. Martij, ſecundum computum anni Iuliani hæſiſſe deprehenditur. Anno 146. ante incarn. ex Hipparchi obſeruatis ad 24. eiuſdem menſis vel 9. Kal. referendũ eſſe conſtat. Hinc patet Soſigenis (vt vt magni mathematici) error, qui 100. amplius poſt Hipparchum annis, in ordinatione Calendarij Iuliani idem æquinoctium ſtatuit in 25 Mart. vel 8 Kal April. quem locum propemodũ 400 annis ante eius tempora occupare debuiſſet. atque hic error Soſigenis ad poſteros etiam dimanauit. vnde Galeni tempore (200. paulo minus poſt Cæſarem annis) æquinoctia circa 24. dies menſium Romanorum Martij & Septembris, inſigniri ſolita, autor eſt Theodor. Gaza. *Aequinoct. & ſolſtit. mutatio.* *Gaza de menſ. Attic.*

Anno incarnationis Chriſti factum eſt 10. Kal. ſiue 23. Martij. Annis 140. poſt incarnationem, Ptolomæus obſeruauit 11. Kal. Tempore Concilij Ni-

cæni circa annum Christi 328. hæsit in die 21. Martii, vel 12. Kal. Apr. Octingentesimo tricesimo primo post incarnationem anno, Thebit Benchorah obseruauit æquinoctium vernum die 17. Martii. Alfragani ætate hæsit in 16. Martii, Arzachel Hispanus 1090. anno obseruauit Id. Mar. siue die 15 eiusdem mensis. Anno 1316. obseruatũ est die Martii 13. Nostra ætate ad 11. & 10. eiusdem mensis deuenit. Ita vt annis circiter 2022, non minus diebus 14. antiquas sedes anteuerterint. Tempus item solstitii à Metone & Euctemone obseruati annis circiter 388. ante natalem Domini congruit 28. Iunii, vt docent Iosephus Scaliger & Iacobus Christmannus, at nostris temporibus in 12. eiusdem mensis deprehenditur.

Coluri Solstitiorum & æquinoctiorũ

Eclipticam & æquatorem transuersim secant duo circuli maiores item qui Coluri vocantur. Vterq; per mundi polos transit, & æquatorem rectè secat. Alter per vtriusq; intersectionis puncta transit & vocatur Colurus æquinoctiorum: Alter per puncta maximæ distantiæ, & Colurus solstitiorum nominatur. Vtrunq; Colurum vt & æquinoctiorum puncta ab antiquis quas in cœlo tenuerunt sedibus discessisse qui motus cœlestes diligentius speculati sunt, facile aduerterunt, siue stellæ fixæ progressæ sint in antecedentia secundum signorum ordinem, vt Ptolomæo placuit, vel puncta æquinoctiorum & solstitiorum retrocesserint in consequentia contra ordinem signorum Zodiaci, vt voluit Copernicus.

Stellarum fixarum longitudines mutatæ.

Prima Arietis stella quæ Metonis Attici tempore in ipsa intersectione vernali fuit, Thaletis Milesij tempore eandem intersectionem duobus gradibus antecessit

cessit. Timocharis ætate 2. gr. 24. m. sequebatur. Hipparchi æuo 4. gr. 3. m. Ptolomæi 6. gr. 40. m. Albumasaris 17. gr. 50. m. Albateni 18. gr. 10. m. Arzachelis 19. gr. 37. m. Alfonsi 23. gr. 48. m. Copernici & Rhætici 27. gr. 21. m. Hinc Francisci Barocii error deprehenditur, qui voluit primam Arietis stellam tempore natalis Christi in intersectione verna hæsisse: præsertim vero quòd ex Ptolomæi obseruatis illud contendit; è quibus non minus quinq; gradibus secutam esse comprobatur. Eodem modo & solstitiorum sedes mutatæ sunt quia æquali semper spatio ab æquinoctiorum punctis distant. Hanc motionem fieri super polis ecliptícæ Ptolomæus, ante eũ Hipparchus & ii omnes qui secuti sunt fatentur. Qua de causa stellarum fixarum latitudo eadem semper manet, declinationes autem mutantur. Multa huius rei testimonia petantur ex c. 3. l. 7. Alm. Ptolomæi. Vnicum cæteris magis insigne proferam ex 7. c. l. 1. Geograp. Ptol. Stellam quam vocamus Polarem, in extremitate caudæ vrsæ minoris, nostra ætate vix tribus gradibus à polo remotam certissimum est: hanc tamen Hipparchi tempore 12. amplius gradibus distantem Marinus apud Ptolomæum docet. Integrum locum profero. In zona torrida Zodiacus totus super ipsam fertur, quare vtrinq; proiiciuntur vmbræ, ac omnia astra oriuntur & occidunt. Sola Vrsa minor tota supra terram apparere incipit in locis Ocele borealioribus 500. stadiis. Parallelus enim per Ocelem grad. 11. $\frac{2}{5}$. ab æquatore distat. Ab Hipparcho autem traditur minoris vrsæ stellam Australissimam, in ipsa cauda extremam, à polo distare gradibus

In Hęronis Geodesiam.

Mutata declinat. stell. fixarum.

dibus 12. ½. Pulcherrimum hunc locum interpretes male vertendo turpissimè deformârunt, (quod post Ioannem Wernerum aduertit etiam P. Nonius) pro quingentis stadiis 5000. pro *Australissimam* reponentes *Borealissimã* decepti fortassis quod nostro æuo borealissima sit. Si Marini & Ptolomæi fidem in hac re suspectam habeant, Strabo 2. l. Geogr. liberabit eos hoc crimine. Sic autem scribit. Ait ergo *Hipparchus* eos quo in Cinnamomiferæ parallelo habitant, (qui à Meroë versus austrũ abest 3000. stadiis rursumq; ab hoc æquinoctialis 8800) proximè omnino abesse à situ medio inter æquatorem & æstiuum tropicum qui per Syenem transit, (quæ à Meroë abest 5000. stadiis.) apud hòs autem primos vrsam minoré totam arctico circulo includi nũquãque occidere. nam stellam in extrema caudâ lucidam (quæ maxime versus Austrum vergit) in ipso circulo ìta collocari vt horizontem tangat. Hæc Strabo, eadé plane mente qua Ptolomæus & Marinus, nisi quòd ex Eratosthenis sententia tum hîc tum alibi semper 700. stadia vni gradui in terra tribuit, cum Marinus & Ptolomæus 500. solum stadia congruere faciant, de qua re postea agemus.

Strabo.

Sequuntur circuli minores in Globis delineati. Hi omnes æquatori sunt paralleli. Primo Tropici qui per puncta maximæ declinationis ecliptícæ ab vtraq; parte æquatoris ducuntur. Qui ad Boream vergit Tropicus Cancri, qui ad Austrum Capricorni dicitur. Sol enim annuo motu eclipticam percurrens, cum ad terminum maximæ ab æquatore distantiæ pervenerit retrocedit æquatoré versus. Hunc retro-

Tropici Cancri, & Capricorni.

cessum

ceſſum τροπὴν Græci vocant & parallelos circulos per initia retroceſſionis ductos Tropicos nominant. Hanc etiam Tropicorum ab æquatore diſtantiam varie immutatam eſſe ex collatis veterum & recentiorum obſeruatis facile conſtat. Vt enim mittamus Strabonem, Proclũ, & Leontium mechanicum, qui diſtantiam alterutrius Tropici ab æquatore graduum 24. poſuerunt, neq; enim ſatis accurate tractaſſe videntur: ex accuratioribus maximorum artificum obſeruatis hoc ipſum licebit deprehendere. Ptolomeus enim alterutrius Tropici ab æquatore diſtantiam 23. gr. 51 ⅓. m. inuenit, quantam ante eum Eratoſthenes & Hipparchus, ideóq; immutabilem exiſtimauit, Machometes Aretenſis diſtantiam hanc obſeruauit 23. gr. 35. m. quantam ante eum Almamon Arabum Rex. Arzachel Hiſpanus 23. gr. 34. m. Almehon filius Albumaſaris. 23. gr. 33. ½. m. Prophatius Iudæus 23. gr. 32, m. Purbachius & Regiomontanus 23. gr. 28. m. Ioannes Wernerus 23. gr. 28. ½. m. Copernicus 23. gr. 28. ⅔. m. deprehendit.

Mutatis Solis declinationum.

Tanta ab vtroq; polo diſtantia, quanta eſt Tropicorum ab æquatore, ducuntur duo circuli minores, qui à polis ad quos accedunt ſumpſerunt nomina: vt alter dicatur circulus Arcticus vel Borealis: oppoſitus autem Antarcticus, vel Auſtrinus. in his circulis poli eclipticæ ſiti ſunt vbi Colurus ſolſtitiorũ eos interſecat. Strabo, Proclus, Cleomedes Græci, & quidam Latinorum certam aliquam diſtantiam hiſce circulis à polis non attribuunt; varios faciunt & mutabiles pro diuerſa poli eleuatione, ſiue inclinatione

Circuli Arct. & Antarct.

natione sphæræ: vt alter describi concipiatur interuallo poli manifesti ab horizonte & erit maximus parallelorum semper apparentium. Alter æquali ab infero polo distantia & est maximus semper latentium.

Circuli verticales. Præter hos circulos in Globis expressos in familiari vsu sunt rerum cœlestium obseruatoribus, circuli quos vocant verticales. hi maiores sunt circuli, quot libuerit, à vertice ad horizontem ducti, Arabes circulos Azimuth vocant, quo etiam nomine, vt plurimum vulgo appellantur. Horum officium in Globorum vsu præstabit quadrans circuli ænei in 90. partes diuisus. hunc vertici cuiusq; loci, cum postulat vsus, oportet adiungere, vt terminus 90. à vertice graduũ horizontem vbiq; attingat. Hic mobilis factus est vt vertici cuiusq; loci affigi queat. vocant quadrantem altitudinis. *Quadrans altitudin.*

De sphæra parallelâ, rectâ & obliquâ. Cap. 3.

Triplex sphæræ positio. PRo varia habitudine æquatoris ad horizontem (vel enim parallelus est, vel secat, idq; vel ad angulos rectos vel obliquos) triplicem sphæræ vel globi situm nobis tradiderunt. Primus est eorum quorũ verticibus polus alteruter imminet, his enim æquator & horizon paralleli sunt, vel potius eundem circulum constituunt. Secundus est eorum quorum Zenith est sub æquatore. Tertius omnibus præterea locis congruit. Primum situm liceat vocare sphæram paral-

parallelam, ſecundum Rectam, tertium obliquam. Prima & ſecunda poſitio ſimplex eſt, tertia multiplex & varia pro varia locorum latitudine. harum omnium conſequentes affectiones ſic habent. *Sphæra Parallela, Recta, Obliqua.*

Sphæra parallela diurna cœli reuolutione neq; orientes neq; occidẽtes, nec altiores aut depreſſiores videt vel Solem, vel Stellas. Præterea cum Sol annuo motu Zodiacum percurrat, quem æquator in duas æquas partes diſpeſcit, quarum altera ad Boream, altera ad Auſtrum vergit, ſequitur vt Sol cum percurrit ea ſigna quæ polo verticali propiora ſunt nunquam ſub horizonte demergatur, ideoq; perpetuũ faciet diem artificialem dum ea pertranſit, quod ſpatium eſt ſex plus minus menſium. contra cum ſigna à polo eminente remotiora peragrat continuam faciet noctem per æquale plus minus ſpatiũ. Quo autem tempore Sol æquatorem attigerit diurna reuolutione ita feretur vt neq; totus ſupra horizontem appareat, neque penitus occultetur, ſed quaſi dimidiatus apparebit reliquus occultabitur. *Sph. parall. accidentia.*

Sphæræ Rectæ hæ ſunt affectiones, ſydera omnia oriuntur & occidunt æquali tempore ſupra horizontem conſpiciuntur, & infra horizontem demerſa latent, artificiales dies perpetuo æquantur noctibus. *Affectiones Sphę. Rect.*

Sphæræ obliquæ hæc accidunt. dies habent noctibus maiores, minores, æquales. Cum Sol in punctis æquinoctialibus, conſtituitur (quod bis in reuolutione annua fieri diximus) dies noctibus æquantur. Cum ab æquatore verſus polum eminen- *Sphę. obliquę quę conueniant.*

em

tem acceſſerit, augentur dies, minuuntur nocles: quouſq; ipſum tropicum attigerit, quo loco conſtitutus, longiſſimas dies breuiſſimas nocles facit. Cum ab æquatore ad polum latentem proceſſerit, nocles facit maiores diebus, vſque dum pertingat Tropicum latenti polo viciniorem: vbi longiſſimas nocles, breuiſſimas dies efficit. Sydera quædam nunquam occidunt, quæ continentur parallelo delineato diſtantia poli manifeſti ab horizonte: alia nunquam oriuntur in æquali à polo occulto parallelo comprehenſa. Hi paralleli ſunt quos (vt diximus) Græci, vt etiam nonnulli Latinorum, vocant Circulum Arcticum & Antarcticum, alterum ſemper conſpicuum, alterum ſemper latentem. Reliqua omnia ſydera quæ hiſce parallelis non continentur, ſuos habent ortus & viciſſim occaſus. Qui intra æquatorem & parallelum ſemper apparentem verſantur, maiori tempore ſuperum, minori inferũ hemiſphærium pertranſeunt. Contra quæ parallelo ſemper latenti viciniora ſunt maiore tempore in infero horizonte verſantur, minore in ſupero. Harum omniũ affectionum hæc eſt cauſa. Sol in æquatore conſtitutus, vt & ſtella etiam ſiqua alia, diurna reuolutione verſatus æquinoctialem deſcribit circulum: extra æquatorem, parallelum maiorem vel minorem, pro diuerſa quantitate declinationis Solis aut Stellæ ab æquatore. Hos omnes parallelos, cum ipſo etiam æquatore, Horizon in Sphæra recta ſecat ad angulos rectos. Cum enim mundi poli in horizonte conſtituti ſint, vertex autem in æquatore, ſequitur vt horizon æquatorem ſecet rectè, quia per polos tranſit.

deinde

deinde quia æquatorem rectè ſecat, omnes etiam circulos æquatori parallelos ſecabit etiam rectè. ideoque ſingulos in binas æquas portiones diſpeſcet. æqua autem portione omnium parallelorum (vt & æquatoris etiã) eminente ſupra horizonté cũ ea quæ demergitur, neceſſarium eſt vt æquali tempore Sol & omnes ſtellæ diurna reuolutione percurrant eam portionem quæ eminet, atque eam quæ latet. Ideo dies omnes æquãtur noctibus, ideo ſydera omnia 12. horis in ſupero hemiſphærio, totidem in infero permanent. At in obliqua ſphæra quia alter polus ab horizonte eleuatur, alter depremitur: diuerſa omnia accidunt. cum enim horizon non tranſit per polos æquatoris, parallelos ſimili cum æquatore ratione non ſecabit: ſed eorum qui polo conſpicuo viciniores, ſunt maius ſegmẽtum eminet, minus demergitur. ex iis qui polo latenti viciniores, minor pars apparet, maior deliteſcit: ſolus æquator biſecatur vt pars conſpicua æqualis ſit latenti. Hinc fit vt in omni obliquæ ſphæræ poſitione Sol in æquatore conſtitutus, dies æquet noctibus. cum manifeſto polo acceſſerit augentur dies, quia maior arcus apparet. cum verſus polum latentem proceſſerit, maiores fiunt noctes quia maius paralleli ſegmentum infra horizontem occultatur. & quantò magis polus alteruter attollitur, tanto maiores fiunt dies æſtiuales itemq; nocles hyemales.

De Zonis, Cap. 4.

QVatuor minores Circuli æquatori paralleli vniuersam terrã in 5. tractus diuidunt, Zonas Græci vocarunt: atq; hoc nomen obtinuit vt apud Latinos etiam vsurpetur, sed & plagas etiam nominant. Græci interdum Zonæ nomen alienè à nostro instituto Planetarum orbibus attribuunt, vt Theon Alexandrinus in Commentarijs Aratæis, ἔχει γὰρ ὁ οὐρανὸς ζ. ζώνας οὐκ ὀπιφαύουσας τῷ ζωδιακῷ. ὧν τὴν μὲν πρώτην ἔχει ὁ χρόνος, τὴν δὲ δευτέραν ὁ Ζεύς, &c. Sunt autem in cœlo Zonæ 7. Zodiaco neutiquam conterminæ, quarum primam Saturnus, secundam Iupiter obtinet, &c.

Zonę tres intemperatæ. Quinque Zonarum siue plagarum terræ tres intemperatas & inhabitabiles veteres Physici & Geographi existimarunt: alteram propter æstum Solis perpetuo incumbentem, quam torridã ideo nominarunt: hanc Tropicis vtrinq; terminari voluerunt, reliquas propter frigus (quia remotissimæ sunt à Solis radijs) incoli non posse duxerunt: quarum altera Arctico, altera antarctico circulo tota continetur. duæ reliquæ Zonæ habitæ sunt temperatæ & habitabiles. altera ex his terminatur circulo Arctico & Tropico Boreo: altera Antarctico & Tropico Austrino. Hæc recepta apud veteres de numero & finibus Zonarum opinio, nacta est inter antiqui-

Vna æstu.

Duæ frigore.

Duæ Zonę temperatę.

antiquiores etiam ſuos oppugnatores.

Parmenides Zonam quã vocant aduſtam longe vltra vtrũq; Tropicum extulit, vt fere duplam fecerit ad eam quæ Tropicis definitur. hunc reprehendit Poſidonius quòd amplius dimidio eius ſpatij quod æſtiuo noſtro Tropico & æquatore continetur, habitari cognouerat. Ariſtoteles Zonam torridam Tropicis, temperatas Tropicis & circulis Arctico & Antarctico terminauit: quem Poſidonius etiam taxat, quod Arcticos circulos, (quos varios & mutabiles fecerunt Græci) Zonarum terminos conſtituerit. Polybius 6. Zonas fecit: aduſtam, Tropicis definitam, in duas etiam diuidens per circulũ æquinoctialé. Alij Eratoſthenis autoritate moti, Zonam quandam anguſtam temperatam & aptam habitationi æquatori ſubijciunt, quorum ſententiæ accedit Auicenna Arabs. Recentiores nonnulli (neſcio qua ratione adducti) hi ſunt Nicolaus Lyranus, Thomas Aquinas, & Campanus, terreſtrem Paradyſum celebratum principio Geneſeos, Aequatori ſubijcere non dubitarunt. Eratoſthenes & Polybius vniuerſam Zonam quam alij aduſtam duxerunt, tẽperatam eſſe voluerunt. Poſidonius receptæ à veteribus phyſicis opinioni refragatus eſt, quòd Syenem ſub Aeſtiuo noſtro Tropico poſitam, & Aethiopiam Syene interiorem, habitatam cognouerat, quorum verticibus Sol diutius immoratur quam eorum qui Aequatori ſubiiciuntur. inde concludit loca Aequatori ſubiecta non eſſe inculta, quia quæ ſub Tropico, nõ ſunt incolis vacua. Ptolomæus c. 6. l. 2. Almag. coniecturam potius quam veram

Strabo. l. 2.

Cleomedes.

historiam existimat quæ de habitationibus æquatori subiectis referuntur, at in Geograph. l. 5. c. vltimo, descripsit nobis longe vltra æquinoctialem Agisymbam Aethiopum regionem. (hanc regionem noui recentiores quosdam, sed contra Ptolomæi fidem, Borealiorem facere æquatore.) hæc Ptolomæi inconstantia præbuit quibusdam occasionem suspicandi non esse vtrunq; hoc opus eiusdem Ptolomæi. *Iacob. Chri.*

Vana hæc esse figmenta quæ de Zonis intemperatis veteres excogitarunt, si non persuadeant Eratosthenis & Polybii autoritas, neq; Posidonii ratio: at hodiernæ Lusitanorum & nostratium nauigationes euincent, nõ solum Zonam quæ torrida antiquioribus dicta est incolis repletam esse, sed & intra circulum Arcticum longè vltra septuagesimũ ab æquatore gradum, omnia esse habitata: vt nullus amplius nostra ætate dubitationi locus sit relictus, nisi forte quispiam malit, cum sacra & veneranda antiquitate etiamnum errare, quam cum recenti experientia vtcũq; testata & comprobata bene sentire.

De Amphiscijs Heteroscijs, & Periscijs. Cap. 5.

Amphiscij.

HArum Zonarum incolas ex diuersa, vmbrarũ ratione in Amphiscios Heteroscios, & Periscios diuiserunt. Qui inter duos Tropicos habitant Amphiscii dicuntur, quòd eorũ vmbræ meridianæ nunc in Austrum (cum Sol eorum verticibus borealior) nunc in septentrionem (cum Sol verticibus Australior

Auſtralior extiterit) proiiciantur.

Qui inter Tropicos & circulum Arcticum degunt Heteroſcii nominantur: quòd vmbræ meridianæ vel in Auſtrum, vel Septentrionem ſolũ proiiciantur, Sol enim ad Septentrionem æſtiui noſtri Tropici nunquam accedit, neq; ad Auſtrum Tropici hyemalis vnquam progreditur. Itaq; qui ſunt borealiores Tropico Aeſtiuo, vmbras ſemper mittunt in Septentrionem. qui Auſtraliores Tropico hyemali, vmbras meridianas in Auſtrum iaculantur. *Heteroſcij.*

Qui intra circulos Arcticum vel Antarcticum verſus polos incolunt Periſcii vocantur, quia gnomones proiiciunt vmbras in orbem, quoniam Sol totâ diurnâ reuolutione ſupra horizontem fertur. *Periſcij.*

De Periœcis Antœcis & Antipodibus. Cap. 6.

EMperatarum Zonarum Incolas ex comparatione eiuſdé Meridiani, & paralleli eiuſdem aut æqualis ad diuerſas æquatoris partes, antiquiores Geographi ita diuiſerunt, vt cuilibet habitationi in his plagis tres alias diuerſas adiecerint, earumque Incolas Perioecos Antœcos, & Antipodes vocarunt.

Perioeci degunt ſub eodem Meridiano itemq; parallelo, æqualiter ab æquatore (ſed ab oppoſitis eius punctis) diſcreti. *Periœci.*

Antœci eundem Meridianum, æqualem parallelũ (ab eodem æquinoctialis puncto in diuerſas partes *Antœci.*

æqualiter

æqualiter dissiti) incolunt.

Antipodes. Antipodes (qui & Antichthones) sunt qui sub eodem Meridiano æquali parallelo, in oppositas partes & ab oppositis eius punctis æqualiter dissiti habitant. vel qui incolunt terræ partes è diametro oppositas.

Sunt itaq; nostri Pericœci Antipodibus nostris Antœci, nostri Antœci Antipodibus nostris Pericœci. nostri Pericœci Antœcis nostris sunt Antipodes.

Eorum comparationes. Nobis cum nostris Pericœcis multa sunt communia. eandé tẽperatam incolimus. hyemem, æstatem, incrementa dierum & noctium, eadé eodemq; tempore habemus. diuersum hoc, quòd quo tempore nobis media dies illuceat, Pericœcis intempesta nox adest. Qui hoc etiam discrininis posuerunt, quòd cum nobis Sol oritur nostris Pericœcis occidit & è contrario, errores nobis suos cõscripserunt. ita enim fieret vt cum dies nobis est longissimus ijs esset breuissimus, quod à veritate alienissimũ. Eundem etiam de Antœcis errorem commiserunt, cum eundem nobis & illis ortum & occasum Solis faciunt. Erroris causa (fortassis) quòd eundem horizontem nobis & Antœcis statuerunt, itemq; Pericœcis: nisi quòd nos superum illi inferum hemisphærium incolimus: lapsus vel mediocriter in Astronomia exercitato indignissimus. Nobis & Antœcis hoc cõmune quòd media dies simul vtriq; itemq; nox. Diuersa hæc, tempestates anni permutantur, nostra æstas ipsorum hyems, noster dies longissimus ipsorum est breuissimus. diuersas Zonas

temperatas

temperatas incolimus. Nobis & Antipodibus omnia ſunt contraria, dies, noctes, eorumq; initia & fines, & anni etiam tempeſtates. Nam quo tempore Sol nobis æſtatem & diem maximum largitur, ipſis hyemem & noctes maximas. nobis cum oritur illis occidit, & è conuerſo. Nos enim ſuperum illi inferum eiuſdem horizontis hemiſphærium incolimus.

De Climatibus & Parallelis. Cap. 7.

PRo diuerſa maximorum dierum quãtitate, Geographi totum terrarum orbem ab æquatore vtrinq; ad polos diuiſerunt in Climata & Parallelos. *Clima.* Clima vocant terræ ſpatium comprehenſum inter duo quæuis loca quorum dies longiſſimi ſemiſſe vnius horæ differunt ab inuicem. *Parallelus.* Parallelum dicunt ſpatium quo dies maximi $\frac{1}{4}$. horæ parte ſe excedunt. ita vt quoduis Clima duos parallelos complectatur. Sunt autẽ Climata, vt & Paralleli, ſpatio inæqualia. primum enim Clima, itemq; parallelus maius eſt ſecundo, ſecundum tertio : in hoc conueniunt quod æquales obtinent maximorum dierum differentias. Antiquiores numerabant Climata 7. alii duo adiecerunt, vt hinc paralleli oriantur 14, illinc 18. Ptolomæus per quadrantes horarum Parallelos numerat 24. per ſemiſſes horarum, quatuor, per integras horas quatuor, per totos menſes 6. vnde præter æquatorem ab vtraq; parte 38. paralleli exſurgent.

In meridiano materiali horũ Globorum nouem

signata sunt Climata ad horarum semisses ad inuicem distantia, deinde notata sunt vlterius discrimina dierum per integras horas, postea ad vsque boreum polum per totos menses, ad suam quæque latitudinem expressa.

Singulorum Climatum & Parallelorum latitudines ab æquatore, distantias ab inuicem, & maximorum dierum longitudines, sequens tabula indicabit.

Secunda pars.

De iis quæ propria sunt cœlesti Globo, & primò de Planetis. Cap. 1.

Stellæ.

HActenus quæ vtriusq; Globi sunt communia. sequuntur quæ cuiq; sunt peculiaria & propria. ac primo quæ cœlesti, vt sunt stellæ in suos Asterismos atq; constellationes efformatæ. Stellarum autem in cœlo lucentium duo genera deprehenderunt qui primi rerum cœlestium motus attente obseruarunt. Primum est Planetarum, secundũ stellarum fixarum. Planetas siue errantes ideo vocarunt, quia nec ad inuicem, nec ad eas quæ fixæ nominantur, eundem situm vel positionem semper obtinent. Fixas autem eundem inter se situm semper tenere, Ptolomæus collatis suis obseruationibus cum iis

quæ

Heteroſcij.

3		13	30	23	10	7	3
	7	13	45	27	36		
4	8	14	0	30	47	6	9
	9	14	15	33	45		
5	10	14	30	36	30	5	17
	11	14	45	39	2		
6	12	15	0	41	22	4	30
	13	15	15	43	32		
7	14	15	30	45	29	3	48
	15	15	45	47	20		
8	16	16	0	49	1	3	13
	17	16	15	50	33		
9	18	16	30	51	58	2	44
	19	16	45	53	17		
10	20	17	0	54	29	2	17
	21	17	15	55	34		
11	22	17	30	56	37	2	0
	23	17	45	57	34		
12	24	18	0	58	25	1	40
	25	18	15	59	14		
13	26	18	30	59	59	1	26
	27	18	45	60	40		
14	28	19	0	61	18	1	13
	29	19	15	61	53		
15	30	19	30	62	25	1	1
	31	19	45	62	54		
16	32	20	0	63	22	0	52
	33	20	15	63	46		
17	34	20	30	64	6	0	44
	35	20	45	64	30		
18	36	21	0	64	49	0	36
	37	21	15	65	6		
19	38	21	30	65	21	0	29
	39	21	45	65	35		
20	40	22	0	65	47	0	22
	41	22	15	65	57		
21	42	22	30	66	6	0	17
	43	22	45	66	14		
22	44	23	0	66	20	0	11

signata sunt Climata ad horarum semisses ad inuicem distantia, deinde notata sunt vlterius discrimina dierum per integras horas, postea ad vsque boreum polum per totos menses, ad suam quæque latitudinem expressa.

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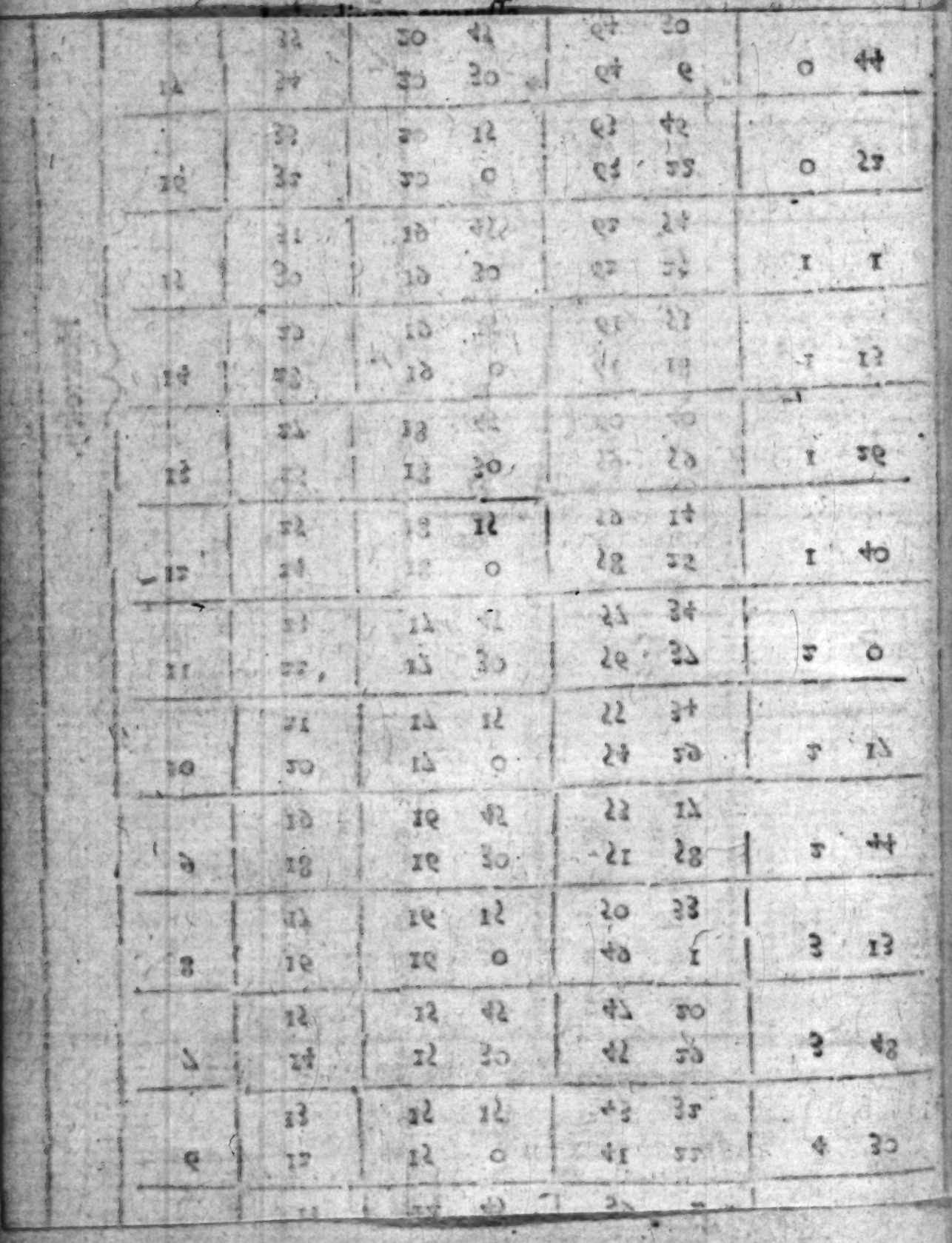
quæ

	Clima-ta	Paral-leli.	Dies Æstiua-les. Hor.	Scr.	Latitudo. Gra.	Scr.	Interualla Climatum. Gra.	Scr.
Amphiſcij	0	0	12	0	0	0	4	18
		1	12	15	4	18		
	1	2	12	30	8	34	8	25
		3	12	45	12	43		
	2	4	13	0	16	43	7	50
		5	13	15	20	33		
	3	6	13	30	23	10	7	3
		7	13	45	27	36		
Heteroſcij.	4	8	14	0	30	47	6	9
		9	14	15	33	45		
	5	10	14	30	36	30	5	17
		11	14	45	39	2		
	6	12	15	0	41	22	4	30
		13	15	15	43	32		
	7	14	15	30	45	29	3	48
		15	15	45	47	20		
	8	16	16	0	49	1	3	13
		17	16	15	50	33		
	9	18	16	30	51	58	2	44
		19	16	45	53	17		
	10	20	17	0	54	29	2	17
		21	17	15	55	34		
	11	22	17	30	56	37	2	0
		23	17	45	57	34		
	12	24	18	0	58	25	1	40
		25	18	15	59	14		
	13	26	18	30	59	59	1	26
		27	18	45	60	40		
	14	28	19	0	61	18	1	13
		29	19	15	61	53		
	15	30	19	30	62	25	1	1
		31	19	45	62	54		
	16	32	20	0	63	22	0	52
		33	20	15	63	46		
	17	34	20	30	64	6	0	44
		35	20	45	64	30		
	18	36	21	0	64	49	0	36
		37	21	15	65	6		
	19	38	21	30	65	21	0	29
		39	21	45	65	35		
	20	40	22	0	65	47	0	22
		41	22	15	65	57		
	21	42	22	30	66	6	0	17
		43	22	45	66	14		
	22	44	23	0	66	20	0	11
		45	23	15	66	25		
	23	46	23	30	66	28	0	5
		47	23	45	66	30		
	24	48	24	0	66	31	0	0

	Menſes,		
Periſcij.	1	67	15
	2	69	30
	3	73	20
	4	78	20
	5	84	0
	6	90	0

Hæc Tabula referenda eſt ad pag. 24. G.

signata sunt Climata ad horarum semisses ad inuicem distantia, deinde notata sunt vlterius discrimina dierum per integras horas, postea ad vsque boreum polum per totos menses, ad suam quæque



quæ ab Hipparcho tradita ſunt multis exemplis comprobauit, c.1.l.7. Almag.

Planetas præter duo Luminaria (Solem inquam & Lunam) 5. numerant. hi præter motum diurnũ quo ab ortu ad occaſum feruntur, ſecuti raptum primi mobilis: liberum habent & proprium quiſq; motum, quo contra ab occaſu ad ortum ſecundum ſucceſſionem ſignorum, ſuper polis zodiaci, feruntur, quem ſuo quiſq; modo & tempore abſoluit. Eorum ordo motuumq; periodus ſic habet. *Planetæ.*

Saturnus χρόνος ſiue φαίνων (Iulius Hyginus ſtellam Solis vocat) omnium Planetarum ſupremus, periodum abſoluit 29. an. 5. menſ. 15. dieb. vt Alfragano placet. ♄

Iupiter, Ζεὺς & φαέθων zodiacum percurrit an. 11. 10. m. 16. dieb. fere. ♃

Mars, ἄρης & πυρόεις duobus annis conficit ſuum orbem. ♂

Sol ἥλιος vno anno hoc eſt diebus 365 ¼. paulo minus ſuam facit conuerſionem. ☉

Venus, ἀφροδίτη, cum præcedit ſolem φωσφόρος Luciſer, cum ſubſequitur ἕσπερος veſper annuo ité ſpatio vt proximè curſum ſuum peragit, neq; duobus ſignis vel 60. gradibus vnquam à Sole diſcedit. ♀

Mercurius ἑρμῆς & σίλβων anno item vno ſigniferum luſtrat, neq; vnquam à Sole amplius vnius ſigni interuallo ſiue gradibus 30. aberrat. ☿

Luna, σελήνη infima Planetarum ſuam periodũ abſoluit dieb. 27. horis 8. paulo minus. ☽

Feruntur Planetæ omnes orbibus ad terram excentricis

centricis, hoc est quorum centra à terræ centro diuersa sunt. Horum orbium semidiametri ad semidiametrum terræ comparati hanc habent rationem.

Qualium semidiameter terræ est, talium semidiameter orbis

Lunæ 48. 56. m.
Mercurij 116. 31. m
Veneris 641. 45. m
Solis 1165. 23. m
Martis 5032. 41. m
Iouis 11611. 31. m
Satur. 17225. 16. m

Excentricitates orbium comparatæ ad ipsos orbes sic habent.

Maurol. ex Alfonso.

Qualium semidiameter orbis deferentis est 60. talium excentricitas.

Lunæ 12. 28. m. ½.
Mercurij 2. 10. m.
Veneris 1. 8. m.
Solis 2. 16. m. 1/10.
Martis 5. 10. m.
Iouis 2. 42. m.
Saturni 3. 25. m.

Excentricitates quorundam Planetarum (præcipuè Solis) à Ptolomæi ætate imminutas decreuisse deprehensum est. Excentricitatem Lunæ Ptolomæus 12. gr. 30. m. definiuit, Alfons. 12. 28 ½. Veneri Ptolomæus tribuit excentricitatis 1. gr. 15. m. Alfon. 1. gr. 8. m. Excentricitatem Solis Ptolomæus ex suis & Hipparchi etiam obseruatis deprehendit 2. gr. 30. m. Alfon. 2. gr. 16 1/10 m. Anno 1512. deprehensa est 2. gr. 2. m. 18. sec. Copernicus inuenit vlterius etiam imminutam 1. gr. 56. m. 12. sec. Vt merito hac de causa Copernici scripta spongijs, vel autorem scu-

ticis dignum cenſeat illuſtriſſimus Iul. Scaliger iniquior quàm par eſt in Copernicum. *Exerc. 90. in Card.*

Hactenus de Planetis, fuſius tractantur à Ptolomæo, Copernico, & ijs qui Planetarum Theorias conſcripſerunt. prolixior eorum tractatio aliena à noſtro inſtituto, cum in Globis propter erraticum & vagantem eorum motum depingi non poſſint, hæc obiter dicta ſint.

De Stellis fixis & earum affectionibus. Cap. 2.

SEquuntur Stellæ fixæ ſuis Aſteriſmis expreſſæ, ſiue formis & cõſtellationibus (ſi malis) Plinius ſigna & Sydera vocat. De numero harũ Conſtellationum, figura, item & nominibus: ſtellarum etiam numero quæ cuiq; tribuuntur, diſſentiunt autores. Ptolomæus, Alfraganus & qui ſecuti (vt plurimum) conſtellationes 48. enumerant. Alij vnum & alterũ adiiciunt: Cincinnũ ſiue crinem Berenices, & Antinoum. Germanicus Cæſar & Feſtus Auienus Rufus, Aratum ſecuti, pauciores faciunt. Iulius Hyginus 42. ſtatuit, Serpentẽ cum Ophiucho coniungit. Præciſionem equi vel equiculum prætermittit, Libram ſignis non annumerat, Scorpionem in duo diuidit, (quod præterea multi faciunt,) Coruũ, Feram & Coronam Auſtralem ſuis conſtellationibus non annumerat, obiter ſolum meminit Taurũ, quem Ptolomæus, ante eum Hipparchus & plerique ſecuti, dimidia parte conſpicuum fecerunt: Virgi- *Fixæ.*

uius,

uius, Plinius, & ante hos Nicander (vt Theoni placet Arati Scholiast.) integrum faciunt, & Pleiades in eius cauda statuunt. De numero stellarum quæ cuiq; Imagini tribuuntur, plurimum à Ptolomæo differunt Iul. Hyginus, Commentator Germanici, (siue is Bassus sit, vt Philander vocat, siue ab ipso Germanico conscripta sint ea Commentaria, vt è Lactantio alii volunt) quandoq; Theon in Commentariis Aratæis, semel & iterum Alfraganus. Si causam, cur his nominibus Constellationes insigniantur, aliam quæris, præter hanc quòd stellarum positio has formas quodammodo exprimit, legas Bassum & Iulium Hyginum abunde è Græcorum fabulis de hoc argumento disputantes. Hipparchum primũ nomina, magnitudines & loca stellarum posteris tradidisse Plinius sua fide refert. Sed iisdem, ante Hipparchum nominibus Timochares, Aratus, Eudoxus vsi sunt. Neque enim Hipparchus, scriptore tradita: Hipparchus Arato antiquior (vt Theon voluit,) alter floruit anno. 420. ab initio Olympiadam, vt palam est ex eius vita à Græco scriptore tradita. Hipparchus autem vixit post annum 600, à principio Olymp. vt eius obseruationes à Ptolomæo traditæ testari poterunt, præterquàm quòd Hipparchi nomine extant Cõmentaria quædã in Eudoxi & Arati Phænomena, nisi hæc Cõmentaria ab Eratosthene (vt aliis videtur) conscripta sunt, qui Hipparchi tempora antecessit.

Stellas fixas Ptolomæus in vniuersum 1022. posuit, annumeratis etiam iis quæ sporades, vagæ & informes nominantur, quas pro splendoris magnitudine

tudine & claritate in 6. ordines distribuit, vt sint primæ magnitudinis 15. secundæ 45. tertiæ 208. quartæ 474. quintæ 217. sextæ 49. quibus obscuras 9. & nebulosas 5. addere oportet. Has omnes suis quasq; imaginibus expressas & magnitudinibus, adiectis etiam nominibus quibus à Græcis & Latinis appellantur (nonnullis etiam quibus Arabes vtuntur nominibus appositis) in Globo cœlesti depictas videas.

Has omnes constellationes (adiectis appellationibus Arabicis, partim ex Alfragano, præcipue vt Iacobus Christmannus ex Epitome Arabica Almagesti Ptolomæi nobis tradidit) suo ordine enumerabimus. qui autem fusiorem tractatũ desiderat, consulat 7. & 8. l. Almag. Ptolo. Copernici Reuolutiones cœlestes, & Erasmi Reinolt Tabulas Prutenicas: vbi singulæ Stellæ numerãtur, suâ cuiq; longitudine latitudine & magnitudine adiecta. Sed hoc obseruãdũ est, quod Copernicus & Erasmus Reinol. lõgitudines stellarũ numerant à prima stella Arietis, Ptolomæus ab ipsa intersectione æquatoris & eclipticæ, neq; enim recte monet Victorinus Strigelius Ptolomæum numerare stellarum fixarum longitudines à prima etiam Arietis stella.

Strig. de primo motu parte tertia.

Hemisphærij borealis constellationes.

Cap. 3.

VRsa minor *Dub Alasgar*. Tres sunt in ea stellæ clariores, quarum quæ in extremitate caudæ, nostris temporibus stella nominatur Polaris, vtpote quia polo

1 *Asterismi enumerati*

polo viciniſſima. reliquæ duæ quæ in anteriori ſunt corporis parte *Alfarkathan* Arabibus vocantur vt docet Alfraganus. Stellas numerat 7. & vna eſt prope hanc informis. Thales conſtellationem hanc primus reperit & canem vocauit, vt docet Theon Arati ſcholiaſtes.

2 Vrſa maior *Dub Alecber*. Hunc Aſteriſmũ Nauplium iuueniſſe Theon aſſerit. Stellas habet 27. Theon 24. attribuit. Vtrãq; Vrſam vt teſtatur Aratus ἅμαξαν Græci vocarunt ſiue currum. at propriè 7. ſtellæ lucidiores vrſæ maioris quæ currus figurã habẽt, ἅμαξα dicitur. Has Arabes *Beneth As* vocãt, hoc eſt, filias feretri vt Chriſtman. docet, corrupte vocant Benenas & ad extremam caudæ retulerunt. Maiorem vrſam in nauigationibus Græci obſeruarunt (vnde eos Φοινίκων vocauit Homerus vt Theoni videtur. vrſam enim maiorẽ Φοινίκην Græci dixerunt.) Minorem Phœnices ſecuti ſunt, vt teſtatur Aratus.

3 Draco *Tanin* Huic annumerantur ſtellæ 31.

4 Cepheus *Alredaf*. Stellas 11. obtinet præter duas informes prope Tiaram.

5 Bootes *Alhaua*. hoc eſt, vociferator & *Alſamech alramech*, hoc eſt, deferens lanceam. Huius inter crura micat ſtella informis primæ magnitudinis, Græcis itemq; Latinis Arcturus, Arabibus *Alramech*, vel ſtella lucidiſſima *Somech haromech*. A Theone in medio Zonæ vel cinguli conſtituitur. Stellis conſtat 22.

6 Corona borealis *Alphecca*. Stellas habet 8.

7 Hercules *Alcheti haterechabateh*, hoc eſt procidens

procidens in genu ſuum, & ſimpliciter *Alcheti*. eſt enim laboranti & defatigato ſimilis (vt vult Aratus) vnde ἐγγόναςι Græcis dictus. ſtellas habet 28. præter eam quæ in extremitate pedis dextri communis Bootæ & vnam informem ad dextrum brachium.

8 Lyra *Schaliaf*. & *Aluakah*, hoc eſt, cadens ſc. vultur, cõſtat ſtellis 10, Hipparcho & Ptolomæo, Timocharis 8. tribuit, vt Theon aſſerit, Alfraganus 11.

9 Gallina, Cygnus *Aldigaga* & *Altayr*. i. volans ſc. vultur: huic dederunt ſtellas 17. præter duas informes prope alam ſiniſtram.

10 Caſſiopeia *Dhath Alcurſi*, hoc eſt domina ſellæ, ſtellas 13. numerat.

11 Perſeus *Chamil Ras Algol*, hoc eſt deferens caput Algol vel Meduſæ, quæ enim in ſumma ſiniſtra manu ſpectatur dicitur Arabibus Ras Algol, Hæbræis Roſch haſſatan, hoc eſt caput dioboli. Huic attribuunt ſtellas 26. & tres informes.

12 Auriga *Memaſſich Alhanã*, h. e. retinens habenas, ſtellas habet 14. quæ autem in ſiniſtro humero præluçet Αἴξ Capra *Alhaiok*, duæ vero quæ ſunt in ſumma manu ἔριφοι hædi dicuntur, hos primus inter ſydera oſtendit Cleoſtratus Tenedius vt Hygino placet.

13 Aquila *Alhbakkab*. recentiores vulturem volantem vocant ſiue Altayr. Sed contra mentem Alfragani, qui Cygno vt diximus hoc nomen attribuit. Huic ſtellas 9. annumerant, præter 6, informes, quas in Antinoi amaſij ſui memoriam Hadrianus imperator Antinoi nomine inſigniri voluit. *Antinous.*

14 Delphinus

14 Delphinus *Aldelphin*. Stellas numerat 10.

15 Telum Sagitta *Alſohain*. Stellas habet 5.

16 Serpentarius *Alhaua* & *Haſalangue*. Stellas habet 24. præter 5. informes.

17 Serpens *Alhaſa*. conſtat ſtellis 18.

18 Equiculus *Kataat Alfaras*, hoc eſt πῶλος ἵππου, equi ſectio obſcuris 4. ſtellis conſtat.

19 Pegaſus *Alfaras alathē* hoc eſt equus maior. huius dexter humerus *Almenkeb*, quæ autem in rictu *Enif alfaras*, hoc eſt naſus equi vocatur. ſtellas habet 20.

20 Andromeda *Almara almeſulſela*, hoc eſt fœmina catenata. Alfraganus vocat fœminam quæ non eſt experta virum, Stellas numerat 23.

21 Triangulum *Almutaleth*, ſtellarum eſt 4.

Signa Zodiaci borea. Cap. 4.

ARies *Alhamel*, ſtellas habet 13. Ptolomæo, Alfragano 12. præter 5. informes.

2 Taurus *Alter*, huius in oculo prænitens Romanis Palilicium, Arabibus *Aldebaran* itemq; *hain Alter*, vocatur. 5. vero quæ viſuntur in fronte eius hyades Græcis, Latinis ſuculæ. ſic dictas volunt Theon & Hero mechanicus quod literæ Y. figuram obtinent. potius fortaſſis quod pluuiarum & imbrium effectrices. Thales Mileſius duas hyades dixit Borealem & Auſtralem. Euripides 3. Achæus 4. Hippias & Pherecydes 7. Sex autem vel

Theon in Aratum.

potius

potius 7. quæ in eius dorſo conſpiciuntur, Pleiades, Latinis Vergiliæ, Nicander, poſt eum Vitruuius & Plinius in cauda Tauri, Hipparchus extra Taurum in ſiniſtro pede Perſei poſuerunt. Has in Trapobana inſula nunquam conſpici Plinius & Solinus referunt. ridicula planè relatio, neq; alio quouis quam Plinio aut Solino digna. eorum enim qui Taprobanam incolunt verticibus prope imminent. Taurus habet ſtellas 33. non annumeratis informibus 11.

3 Gemini *Algeuſe* ſtellas (præter 7. extra formam) 18. obtinet.

4 Cancer *Alſartan* ſtellis conſtat 9. cum quatuor informatis.

5 Leo *Alaſed.* huius in corde lucidiſſima quæ prænitet *Keleb Alaſed*. i. cor Leonis, Græcis Βασιλίσκος Regulus, quod qui ſub ea naſcuntur Regiã habent natiuitatem. Stellas habet 27. cum informatis 8. Ex informibus inter extrema Leonis & maiorem vrſam, vt Ptolomæo placet (Theon Aratum ſecutus Virgini annumerat) Cincinnum nouum ſydus, efformarunt. Conon mathematicus in Ptolomæi & Berenices gratiam Crinem Berenices vocauit, & Callimachus Poeta ſuis verſibus celebrauit. *Proclus de Sphæra.*

6 Virgo *Alſinbala*, quæ in ſumma ſiniſtra præfulget στάχυς ſpica vocatur, Arabibus *Alahzel* & *Aſimech.* male in dextra Vitruuius & Hyginus ſpicam collocant. Stellas habet Virgo 26. præter ſex ſporades ſiue informes.

Australis hemisphærii effigies, ac primo quæ in Zodiaco. Cap. 5.

7 Ibra *Almizan*. Lanx meridionalis vocatur *Mizan aliemin*, hoc est libra dextra vel meridionalis. stellis 8. insignita est præter 9. informes.

8 Scorpio *Alakreb*, Stellas habet 21. & 3. extra formam.

9 Sagittarius *Alkus*, Stellis 31. insignis conspicitur.

10 Capricornus *Algedi*, huic deerunt Stellas, 28.

11 Aquarius *Aldalu*, stellas 42. numerat.

12 Pisces *Alsemcha*, stellas habent 34. & informes quatuor.

Australis hemisphærij Constellationes extra Zodiacum. Cap. 6.

1 Etus eodem nomine dictus Arabibus stellas 22. enumerat.

2 Orion *Algibbar*, & *Algeuze*, (quod nomen Geminis etiam tribuitur.) Vocatur etiam Iugula, Basso Incola, nisi hoc corruptè pro Iugula legi dicas. Stellis 38. conspicuus. Huius quæ in humero dextro *Ied Algeuze*, hoc est manus Orionis, quæ in sinistro *Rigel Algeuze*, hoc est pes Orionis Arabibus dicitur.

3 Eridanus

3 Eridanus *Alnahar*, hoc eſt fluuius, ſtellas habet 34. Lucida in eius extremitate *Acharnahar* vulgò Acarnar nominatur.

4 Lepus *Alarnebet*, ſtellas 12. numerat.

5 Canis *Alcheleb alechber*, hoc eſt Canis maior & *Alſahare Aliemalija* .i. Canis dexter, vel meridionalis vocatur. Huius in ore ſplendidiſſima micat quæ vocatur σείριος, *Cabbir* vel *Echber* Arabibus, corrupte Habor. Stellas habet 18.

6 Procyon Antecanis quia ante Canem oritur, *Alcheleb alaſgar*, hoc eſt Canis minor, & *Alſahare alſemalija*, hoc eſt canis ſeptentrionalis, vulgò deprauate Algomeiza. Stellas habet. 2.

7 Argo Nauis *Alſephina*, ſtellis 45. fulgens conſpicitur, cuius in temone lucidiſſima Græcis Κάνωβος, Arabibus *Sohel*, Hebræis Cheſil vocatur, (vt Chriſtmanno videtur) quod ſi verum ſit, Arias Montanus in itinerario Beniamini Tudelenſis non rectè pro Orione accipit. Azaniæ incolæ equum vocarunt, vt Ptol. teſtatur. *C. 7. l. 1. Geograph.*

8 Hydra *Alſugahh*. Ægyptij vocarunt Nilum, vt Theoni placet in Commentarijs Aratæis. Stellas habet 25. & duas extra formam.

9 Crater Vrna *Albatina*, Stellas habet 7.

10 Coruus *Algorab*, habet item 7.

11 Centaurus, eodé nomine Arabibus vocatur, ſtellis 37. inſignis conſpicitur. Stellæ quæ in eius pedibus poſterioribus, effingunt crucem illam adeo ab Hiſpanis celebratam.

12 Fera *Alſubah*, cui attribuerunt ſtellas 19.

13 Ara ſiue Thuribulum *Almugamra*, Baſſus

vocat Sacrarium, ſtellas habet 7.

14 Corona Auſtralis *Alaclil algenubi*, ſtellas habet 13. in duplicata ſpira fulgentes, vt inquit Alfraganus. Theon 19. tribuit.

15 Piſcis auſtrinus *Ahaut Algennubi*, ſtellas habet 12 Ptolomæo, Alfragano, 11. Huius in ore quæ conſpicitur lucens *Phom ahaut*, hoc eſt os piſcis, vulgo fomahant.

Deſcribitur etiam in Globo cœleſti Zona quædam colorem quaſi lactis tota retinens: vnde nomen inuenit, vt vocaretur via lactea. Eſt autem non æqualis & regulata, ſed latitudine, colore, ſtellarum frequentia, & ipſo ſitu differens atque varia, quibuſdam partibus ſimplex, alijs gemina conſpicitur. Tractum eius in Globo expreſſum & à Ptolomæo fuſe explicatum videas c. 2. 8. 1. Almag.

De Stellis in Globo non expreſſis. Cap. 7.

PRæter hæc aſtra à Ptolomæo nobis enumerata, multa alia ſe conſpicienda præbent, præſertim hyberno tempore & ſerena nocte, cum & plura ſe exhibent conſpicienda, & quæ videntur maiora apparent. Cauſam quæris, extra noſtrum inſtitutum, ſed paululum degrediamur, præſertim quòd nonnulli in cauſa huis rei deſignanda longiuſcule aberrarunt. Sunt enim qui (pro ea quam habent in phyſicis & opticis peritia) volunt vel concipi plura quam reuera ſint per imaginationem vel deceptionem viſus,

ſus, vel (quod æquè eſt ridiculum) aerem hyeme tenuiorem & puriorem ea præbere conſpicienda, quæ æſtate (cum eſt craſſior) latent: cùm diuerſa & planè contraria ſit ratio. Ideo enim quia aer craſſior, ea propter plura itemq; maiora perſpiciuntur. Ratio ex optices cognitione probat, viſus iudicat, experientia docet, autoritas ſuadet. Radios per medium quod eſt craſſius refractos, & veluti in canales quoſdam diffuſos, maiorem verâ obiecti imaginem viſui obijcere, non alienè ab opticorum mente docet Strabo ex Poſidonio. Perſpicillorum ope plura videri, & quæ videntur maiora quam ſiue ijs concipi, norunt infimi è vulgo. Fertur (inquit Cleomedes) Sol de profundis ſpectatus puteis maior apparere, quam cum è celſioribus locis conſpicitur, idque propter humidiorem & craſſiorem aerem in imo puteo. Si fieri poſſet vt per parietes & ſolida quæuis corpora Sol ſpectaretur (vt de Lynceo fabulata eſt antiqua Græcia) maior multo conciperetur, vt rectè docet Poſidonius. Orientem itemq; occidentem ſolem maiorem videmus (præſertim in altis maribus) inquit Strabo, maiorem dicimus, non tamen centuplo vt (ad extremũ Hiſpaniæ promontorium quod ſacrum vocarunt occidentem Solem conſpici) dixit Artemidorus, quod in eo meritò taxauit Poſidonius. Alfraganus huius rei cauſam vult, quia vapores è terra eleuati, aſpectui & orienti Soli interpoſiti, maiorem nobis Solem exhibent, eandem volunt Strabo & Cleomedes ex Poſidonio: neq; hoc multum alienè ab optimorum phyſicorum mente. hæc hactenus. Spectantur etiam in parte mundi

L. 3.

Cleomed. l. 1.

C. 5. Vincent.

Alfrag. c. 2.

Auſtrina

Auſtrina ſtellæ multæ, quarum, quòd ab artificibus noſtri orbis obſeruari non poſſent, nulla ad nos peruenit notitia. ex his etiã memoratis multa nobis nõ conſpiciuntur, ad borealem mundi polum magis accedentibus. De ſtellis prope Auſtrinum mundi polum apparentibus, accipite hiſtoriam vere admirandam, quam ex Americo Veſpuccio retulit Franc Patricius Senenſis in fine l. 15. Nouæ Philoſophiæ. ſic habet. Cœlum decentiſſime exornatur ſyderibus quibuſdam, quæ ſunt nobis incomperta. Quorum ego conſignantiſſime memini, percenſui fere viginti, tantæ claritudinis vt apud nos Venus & Iupiter. *Deinde.* Pro comperto itaq; habui maioris eſſe magnitudinis quam autument mortales. & imprimis tres Canobos conſpicatus ſum, duos claros admodum, tertium obſcurum & diſſimilem alijs. *Et mox.* Quæ vero ipſum polũ ambiunt tria ſunt, quæ figurã præ ſe ferunt trianguli orthogoni, quorum id quòd medio loco viſitur circumferentiam habet grad 9 ½. & vbi hæc exoriuntur, à læua conſpicitur Canobus albicans eximiæ magnitudinis. *Poſtea.* His ſuccedunt tria alia præclara ſydera quorum medium habet diametrũ circumferentiæ grad. 12 ½. & in medio eorum cernitur alter Canobus albus. hunc ſequuntur ſex alia conſpicua ſydera, quæ claritate cunctis octauæ ſphæræ ſyderibus præſtant, quorum medium in ſuperficie firmamenti diametrum habet circumferentiæ grad. 32. Hæc aſtra concomitatur Canobus ingens ſed niger, quæ omnia ceruuntur in via lactea. Hijs ex Corſalio addit quæ ſequuntur, Andreas vero Corſalius ſcribit, duas nu-

Vanę relationes ſtel. Auſt. Patricius.

beculas

beculas ſatis magnas circa polum verſari, & inter eas ſtellam eſſe à polo gradibus circiter 11. diſtante: ſupra quas cerni ait crucem admirabilem inter 5. ſtellas quæ eam circundant, cum aliis quæ cum ea reuoluuntur procul à polo grad. 30. quæ tantæ ſit pulchritudinis vt nullũ cœleſte ſignum ei poſſit comparari. Hæc eſt hiſtoria verè mira de Auſtrinæ mundi partis Phænomenis. Auditum admiſſi riſum teneatis? Tres procudit Canobos Veſpuccius, vnicam agnouit Ptolomæus & antiqua Græcia, in temone Argûs nauis conſtitutum. Hoc eſt præterea animaduerſione dignum, quod Patricius (quantũ ego ex illius ſcriptis coniicere poſſum) ex male expreſſis Veſpuccii verbis ab ipſo peius intellectis, ſtellam quãdam diametri apparentis magnitudinis gra. 32. pulchrè ſibi efformauit: cum Solis diameter minuta 32. vix attingat. Quæ autem nobis comperta ſunt & explorata de his Auſtrini mundi Phænomenis in nauigatione pluſquam annua 1591. & 1592. vltra æquinoctialem circulum ſic ſe habent. Tres ſolum ſtellæ primæ magnitudinis nobis conſpectæ ſunt quas noſtra Anglia non cernit. Ptolomæus in Alexandria has omnes vidit. Prima eſt in temone Argûs, Canopũ vocant, ſecunda in extremitate Eridani, tertia in dextro centauri pede. ſi quartam adiicies, quæ in ſiniſtro Centauri genu ſpectatur, valde conſpicuam, non multum aduerſabor. Alias primæ magnitudinis Auſtrina mundi pars non videt: vix vnam aut alteram ſecundæ magnitudinis oſtendit Ptolomæo non conſpectas. neque enim aliqua vniuerſi cœli pars paucioribus, & minoris luminis

ſtellis

stellis ornatur, quam quæ Austrino polo vicinior. vidimus Andreæ Corsalii nubeculas, alteram alteri diametro quasi subduplã vel subtriplam, colore non absimiles circulo lacteo, ab ipso polo non admodũ remotas. nostrates nautæ Megallani nubeculas solebant nominare. Admirandam quam Corsalius vocat crucem, Hispani crusero, nostrates Crutiers nominant, conspeximus. Stellas ex quibus constituitur vidit Ptolomæus, sunt enim lucidiores in posterioribus Centauri pedibus. Hæc omnia sæpius eoque diligentius ideo spectauimus, quod de admiranda magnitudine stellarum Austrini orbis, non dissimilia ijs quæ refert Patricius apud Cardanum legisse memineram.

Card. de subtil.

Tertia pars.

De Geographica descriptione Globi terrestris, & partibus terræ cognitæ. Cap. 1.

Geographia Globi terrestris.

TOtam tellurem tanquam immensam Insulam Oceano cinctam Dionysius Afer in initio suæ periegeseos tradit. Idem ante eum Homerus & Eratosthenes (quem Dionysium in plurimis secutum monet Eustathius eius scholiastes) voluerunt, vt docet Strabo. Idem post eum Mela, ad Boream terminarunt mari glaciali quod Saturninum & mortuum

vocat

vocat Dionyſius. ad orientem Eoo, quod & Sericũ vocant, ad Merediem mari Rubro (Indicum Ptolomæus vocat) & Æthiopico, ab occidente Atlantico alluitur. Ptolomæus eos qui terram vniuerſam Oceano cingunt à conſcribendis erroribus incipere arbitratur. Alii itaq; fines & termini ei magis placent. Vide C. 5. l. 7. Geograph. Hoc omne quidam antiquiorum in duas diuiſerunt partes Aſiam & Europam, qui ſecuti ſunt tertiam adiecerunt quam Africam, interdum Libyam vocant. Ex his Aſia eſt maxima, ſequitur Libya, Europa eſt omnium minima, ſecundum Ptol. l. 7. Geographiæ.

Europa ab oriente, quâ Aſiæ adiacet, terminatur interiacente mari Ægæo, (nunc Archipelago) Ponto Euxino (hodie Mare Maggiore) palude Mæotide (Mare delle Zabacche) Tanai fluuio (vulgo Don) & Meridiano qui inde ad Schythicum vel glaciale mare protenditur. reliquis ex partibus mari alluitur. ad Meridiem ab Africa dirimit fretum Gaditanum & Mediterranei maris pars. huius freti longitudinem ſtadiorum 120, latitudinem 70. Strabo voluit. Mela latitudinem facit 10000. paſſuum hoc eſt 80. ſtadiorũ. Europam quondam Africæ continentem adhæſiſſe Eratoſthenes putauit, tradiderunt eius loci incolæ (inquit Plinius.) effoſſum Iſthmum labore Herculis fabulantur. Ab Occidente Europa finitur Oceano Atlantico. Britannico, Germanico & glaciali quâ Boream ſpectat. *Europa.*

Africam ab Aſia ſeparat (vt Dionyſio & Melæ placet) Nilus fluuius & Meridianus per eius defluxũ ad Aethiopicum vſq; mare ductus. Ptolomæo magis *Africa.*

placet vt dirimantur ſinu Arabico (quem minus rectè vocant Mare Rubrum) & Meridiano qui inde ducitur ad Mare Mediterraneum per Iſthmum qui eadem ſeiungit, quiq́ue Aegyptum Arabiæ & Iudææ facit continentem. Neque enim videtur ei congruũ vt Aegyptus diſtrahatur & pars eius Africæ reliqua Aſiæ tribuatur: quod fiet ſi Nilus fluuius ſtatuatur terminus, neq; hoc Straboni videtur inconcinuum, cùm eius Iſthmi longitudo quæ duo maria dirimit 1000. ſtadijs maior non ſit. Hunc ab antiquis temporibus aquis coopertum priuſquàm Oceanus Atlanticus mediterraneo mari conflueret Eratoſthenes exiſtimauit, eodem Stabone atteſtante. Reliquis ex partibus circumambit mare: merediem verſus Aethiopicum, Atlanticum ab Occidente, ad Boream Auſtralis Europæ terminus. Ptolomæi ignorationem de Auſtrali parte Africæ, quam facit Aſiæ continuam per incognitam terram, Auſtralem maris Indici & ſinus Aethiopici partem ambientẽ, ſi antiquorum relationes non probent, nec Herodoti qui refert quoſdam à Dario miſſos totũ hunc ambitum circumnauigaſſe, nec Heraclidis Pontici qui perhibet Magum quendam à Gelone veniſſe qui ſe diceret nauigio totam hanc oram circumiuiſſe, (quia ſuſpectas habet Poſidonius cõtra Polybium) neque Eudoxi Ciziceni hiſtoria à Poſidonio approbata; quam Strabo, Plinius & Mela ex Cornelio Nepote grauiſſimo viro refert, (quia hanc hiſtoriã non multum abeſſe à Pythææ Euemeri & Antiphanis mendacijs exiſtimauit Strabo) neque Iubæ regis traditiones de hac eadem re à Solino relatæ:

vt

vt vr inquam antiquiores iſtæ traditiones Ptolomæi ignorantiam non probent: manifeſtiſſimè tamen euincunt Luſitanorum recentiores nauigationes factæ per Promontorium Africæ extremum (quod Bonæ ſpei vocarunt) ad extremas vſq; Indias.

Aſia ab Europa & Africa, (vtranq; autem ab occidente ſpectat) quibus ſeparetur terminis dictum eſt. Reliquis ex partibus Mare alluit, congelatum vel Hyperboreum ad Septentrionem, Oceanus Sericus & Eous ad Orientem, Rubrum & Indicum à Meridie. Borealiora Aſiæ vt & Europæ non mari ſed incognitâ terrâ ambiri voluit Ptolomæus, volunt quidam recentiores, qui Groenlandium quâ vocamus Iudiæ continentem arbitrantur. De hac eorũ opinione vt plurimum dubitemus faciunt noſtratiũ multæ nauigationes, qui extrema Noruegiæ longe intra Arcticum circulum præteruecti, vltra ſtrictũ illud, quod nouam quam vocant Zemlam à Ruſſia ſeparat, omnia Mari circundari teſtantur. vt mittam quod ex Cornelio Nepote grauiſſimo ſcriptore refert Mela, datos eſſe, Q. Metello Celeri (qui Proconſul Galliis præerat) à Sueuorum rege, Indos quoſdam qui vi tempeſtatum abrepti ex Indicis æquoribus in Germaniam delati ſunt: & quod Patrocles apud Strabonem aſſerit, poſſe per oram matitimam Bactris, Hircania marique Caſpio multo ſeptentrionaliorem Indiam vſque circumnauigari, ijs autem locis præfuit Patrocles.

Aſia.

Pem. de dim. ter.

L. 3. c. 4.

L. 2.

De quantitate habitatæ terræ variè ſcripſerunt antiquiores. Ptolomæus eius longitudinem ab occidente Orientem verſus definiuit Meridiano tranſe-

Ptol. l. 7. Geogra.

unte per insulas Fortunatas,& eo qui per Synarum Metropolim ducitur, vt complectatur semissem æquatoris siue gradus 180. horas æquinoctiales 12. stadia in æquatore 9000. Latitudini terminum Australissimum posuit parallelum qui vltra æquatorem vergit ad Meridiem grad. 16.m.25. Borealem terminum fecit parallelum qui per Thulem ducitur,grad. 63.ab æquinoctiali distantem,ita vt tota latitudo 79. gr.25.m.vel integris 80.gr.concludatur,stadiis 40000. proximè. Excurrit itaq; in ortum & occasum longius quam in Austrũ & Boream sub æquinoctiali dimidio paulo amplius,in parallelo Borealissimo $\frac{1}{50}$. parte propemodum. Merito itaq; extensioné terræ in ortum & occasum longitudinem,in Austrum & Boream latitudinem vocarunt antiquiores attestante Ptol.l.1.Geograph.c.6. Strabo longitudinem agnoscit quantam Ptol. 180. grad. æquatoris, itidem & Hipparchus,vtcunq; in stadiorum numero plusculũ dissentiant. Nam posuerunt longitudinem quæ est sub æquatore 126000. stadiorum, secuti Eratosthenis mensuram quæ tribuit vni gradui 700 stadia. Latitudinem multo minorem fecit Strabo,stadiorum paulo minus 30000. & definiuit parallelo ducto per Cinnamomiferã regionem stadiis 8800. ab æquatore ad Boream distante, eoque qui transit per loca Britannia Borealiora stadiis circiter 4000. Parallelum per Cinnamomiferam Australioré Taprobana, aut per eius extrema Meridiem versus transire facit Strabo, sed magnam prodit ignorantiã cum eius pars australior vltra æquatorem excurrat attestante Ptolomæo 7. Geograph. c. 4. vt mittam

Strab.l.2.

nuperas

nuperas Luſitanorum nauigationes. Dionyſius Afer longius etiam aberrat qui Taprobanam Tropico Cancri ſubiecit.

Hactenus de finibus & terminis orbis habitati ab antiquioribus conſtitutis. Noſtra ætate Hiſpanorum & noſtratium nauigationibus Africæ ora maritima ad 35. amplius Auſtrinæ latitudinis gradũ penitus luſtrata eſt, & Europæ pars borealior intra Arcticum circulum ad 73 vſq; gradum latitudinis cognita eſt, præterquam quod nouæ orbis partes inuentæ (vltra ſpem & fidem antiquiorum) ne vel ſolo nomine ipſis cognitæ. America quaſi alter orbis excurrens vltra 52. Auſtrinæ latitudinis gradũ terminata freto Megallanico, ad Boream ſe proijcit intra circulum Arcticum quâ ex parte Mari etiam terminari, noſtratium multæ nauigationes magnum faciunt fidei argumentum. Mitto oras maritimas obiter conſpectas nondum ſatis luſtratas, vltra mare illud qud borealiora Europæ & Aſiæ ambit, itemq; eas quæ ſunt Auſtraliores Mari Indico & Erythræo: quas, quin Auſtraliori freti megallanici terræ continentes iudicemus, nulla dum experientia contrarium potéſt euincere.

Europa (ſiue ab Europa Tyria Agenoris aut (vt aliis placet) Phœnicis filia, vt videtur Herod. ſiue ab Europa nympha Oceani, vt vult Hippias apud Euſtathium: ſiue ab Europo quadam vt Niciæ placet apud eundem Euſtathium nomen ſortiatur) has præcipuas continet regiones, Hiſpaniam, Galliam, Italiam, Germaniam ſuperiorem & inferioré, Slauoniam, Græciam, Hungariam, Poloniam, Moſcouiam

uiam siue Russiam, Noruegiam, Suediam & Daniã. Huic adiacent Insulæ præcipuæ Britannicæ, Altera Scotiæ & præcipuè Angliæ imperio nobilis. altera est Hibernia Angliæ regno subdita. Deinde sunt Acores & multæ insulæ in Mediterraneo mari vt Sicilia, Sardinia, Creta, &c.

Africa (siue ab Aphra quodã nomen accepit, socio expeditionis Herculis contra Gerionem, vt vult Eustathius, vel ab Iphrico quodam Arabum rege, vnde in lingua Arabum Iphrichia vocatur, vt testatur Ioannes Leo. vel à torrente æstu vt dicatur ἄφρικη quasi siue frigore vt aliis placet,) has habet præcipuas regiones. Proximè freto Gaditano (quod hodie dicitur, fretum Gibraltar) iacet Barbaria antiquitus dicta Mauritania, quæ continet regna Marocco, Fessæ, Algeriæ, Tuneti. proxime Barbariam Aegyptus est Mari etiam Mediterraneo adiacens. Interius post Barbariam sequitur Biledulgerid antiquioribus dicta Numidia. Tertia est quæ Latinis & Græcis, Libya dicitur, Arabes Sarram vocant. Sequitur Nigritarum regio adiacens Fluuio eiusdem nominis qui Niger dicitur, hodie vocãt multi Senegã, multa ignobilia regna continet vt sunt Gualata. Guinea, Melli, Tombutum, Gagos, Guberis, Agades, Canos, Casena, Zegzega, Zanfara, Burnum, Gaoga, Nubia. Succedit ampliſſimum imperium Aethiopum regis quem Pretegiani vocant, Christianæ religionis professione ab Apostolorum vsq; temporibus nobile, Abyssinorum nomine notũ, (rectius Hhabassinos vocandos esse monet Arias Montanus in Itinerario Beniamini Tudelensis.) Eorũ imperium

rium in Aſia etiam iampridem latiſſime patebat. His ad occaſum adiacent obſcura regna Manicongo & d'Angola, ad ortum & Meridiem, Melinde, Quiloa, Mozambique & Benamataxa. Inſulæ præcipuæ quæ huic adiacét ſunt Madagaſcar, Inſulæ Canariæ, & Cap. Viridis, & Inſula S. Thomæ æquatori ſubiecta.

Aſia ſiue dicta ſit ab Aſia matre Promethei vt vulgo volunt, ſiue ab Aſio quodam Heroe vt placet Hippiæ apud Euſtathium, tota hodie ſubiecta eſt Turcarum Imperatori & Perſarum regi ad vſq; Indiam orientalem quæ plurimũ ſubiecta eſt regibus Chinæ, & Pegu. Borealia Aſiæ occupãt Muſcouitæ, Tartari, & qui regionem Cathaiæ incolunt. Inſulas habet, præter Cyprum & Rhodũ in Mediterraneo mari, ad Auſtrum Sumatram, Zeilam, Iauam vtranq;, Moluccas, Philippinas, Borneo, & infinitas propemodum alias, ad ortũ iacent Iapones Inſulæ.

America, quæ ab Americo Veſpuccio qui primus hanc terrã aperuit nomen accepit, fines ac terminos habet, ab oriente (qua Europam ſpectat & Africam) Oceanum Atlanticum: ad occidentẽ Mare quod vocant del Zur: Auſtraliſſimã partem claudit fretum Megallanicum: Borealiſmam partẽ adhuc incognitam Mari congelato terminatam magnum fidei argumentum faciunt multæ noſtratium nauigationes, D. Martini Frobiſher, & Ioan. Dauis. Has præcipuas numerat regiones ad Boream terrã Laboris, quæ Hiſpanis dicitur Tierra de Labrador. Succedit Baccalearum regio, inde noua Francia, deinde Virginia, poſtea Florida, proxime noua Hiſpania vrbe Mexicana maxime nobilis, poſtrema eſt

Braſilia

Brasilia & Peruuia ad Austrum vergentes. Multas habet adiunctas Insulas, plurimæ in sinu iacent Mexicano, Americæ ad ortum, quorum insigniores sunt Cuba, Hispaniola & multæ ignobiliores aliæ.

Terræ incognitæ.

Sunt præterea aliæ orbis partes nondum satis lustratæ & cognitæ: vltra mare Indicum terræ Australis, Noua Guinea, vtrũ insula an continens terræ Australi, nondum sanctis cognitũ. Borealis orbis partes, Europæ, Asiæ & Americæ obiectæ quas nostratium multæ nauigatiõnes detexerunt.

De ambitu terræ vel maioris in ea circuli, & de mensura vnius gradus.
Cap. 2.

De ambitu terræ.

DE ambitu maximi in terra circuli cum ad Geographiæ studium & nauigandi scientiam apprimè sit necessaria, eius cognitio restat vt dicamus. neq; videbor (spero) ab instituto aberrare si aliquanto prolixius huic argumento insistam, præcipuè quia magna est in hac re dissentio inter magni nominis scriptores vt quem sequamur etiamnum sit in controuerso.

Arist.

Cleom.

Aristoteles in fine 2. de cœlo (idque ex mathematicorum, vt ait, sententia) circumferentiæ terræ 400000. stadiorum attribuit, Cleomedes 300. millia numerat. l. 1. Lysimachiæ enim & Syenes vertices per $\frac{1}{15}$. eiusdem meridiani partem distare sciotericis instrumentis deprehensum refert. Interuallum autem

autem 20000. ſtadiorum ponit, vnde ambitus 300000. elicietur. tantus enim numerus exurget, ſi 20000. per 15. multiplicaueris. Eratoſthenes (ſi Straboni, Vitruuio, Plinio, & Cenſorino credimus) 252000. complecti voluit. Hipparchus (atteſtante etiam Plinio) adiecit ſtadiorum paulo minus 25000. Strabo eâdem qua Eratoſthenes vſum menſurâ, cum alibi tum in fine 2. Geograph. docet: vbi inquit ex Hipparchi ſententia quantitatem terræ continere ſtadiorum 252000. quantam & Eratoſthenes tradit. Eratoſtheni ſuffragatur fabuloſa Dionyſiodori relatio apud Plinium l. 2. c. vlt. in ſepulchro Dionyſiodori reperta eſt (inquit) epiſtola ſcripta ad ſuperos, qua teſtabatur ſemidiametrum terræ ad 42000. ſtadiorum continere. hic numerus ſexies aſſumptus 252000. producit. Cleomedes, Eratoſthenis, & Poſidonij obſeruata referens, aliquanto minorem circuitum ex Eratoſthenis ſententia facit, nempe 250000 ſtadiorum. Syenem enim & Alexandriam ſub eodé ponit Meridiano. Syene ſub æſtiuo poſita Tropico Sole principium Cancri obtinente, gnomones habet meridie expertes vmbrarum. Plinius refert profundum puteum in huius rei fidem effoſſum eodé tempore totum illuminatũ id ipſum teſtari. Alexandriæ Sole in eodem loco conſtituto, eodé tempore gnomon vmbram proijcit ad $\frac{1}{50}$. partẽ periferiæ cui ad rectos angulos erigitur, vt eius ſummitas eiuſdem periferiæ ſit centrum. Interuallum autem Syenes & Alexandriæ eſſe ſtadiorũ 5000. præter Eratoſthenem, Plinius & ſæpiuſcule Strabo poſuerunt. Quòd ſi 5000. per 50. multiplicaueris, exſurgit

Stab. paſſim
Vitr. l. 1. c. 6
Pl. l. 2. c. 108
Cenſor. c. 13.
Cleom. l. 1.
L. 2. c. 73.

numerus 250000 quot ſtadia vniuerſæ terræ ambitui Eratoſthenes attribuit. Poſidonius (Methodo non multum abſimili) circũferentiam terræ 240000. ſtadia continere, nititur probare. Primo Rhodũ & Alexandriam ſub eodem poſita Meridiano pro confeſſo ſumit, quod & Ptolomæus agnoſcit l. 5. Alm. c. 3. Canobus autem ſtella lucidiſſima in temone Argûs (quam Græcia non cernit, ideoq; videtur Aratus eius non meminiſſe,) in Rhodo primum conſpicitur, at in ipſo horizonte, ſtatimq; ad mundi conuerſionẽ occidit: aut vt ait Proclus ægre conſpicitur aut certe ab editis locis. at cum à Rhodo Alexandriam vſque peruẽeris ſublimis apparet quarta enim ſigni parte cum ad meridianũ acceſſerit ab horizonte attollitur, hoc eſt $\frac{1}{48}$. parte Meridiani per Rhodũ & Alexandriam. (eadẽ Proclo mens ſi legeris Canobum in Alexandria conſpicuè cerni quarta circiter ſigni portione ſupra horizontem extante. Mendoſe vulgò legitur in Alexandria non cerni. fortaſſe ἄφανες pro ὑφανες irrepſit.) Diſtantiam autem Rhodi & Alexandriæ definit ſtadiorum 5000. quantam & Plinius. 5000. autem per 48. multiplicata producunt 240000. numerũ ſtadiorũ totius terræ circumferentiæ congruentẽ ex Poſidonij ſententia. Ptolomæus paſſim in Geographia & ante eum Marinus Tyrius 500. ſtadia tribuerunt vni gradui maximi in terra circuli qualium totus ambitus 360. cõtinet, vt tota circumferentia complectatur non amplius 180000. ſtadijs. Ptolomæi menſurã terreſtris ambitus antiquioribus cognitã, ab ipſo Poſidonio approbatam teſtis eſt Strabo l. 2. Geographiæ,

L. de Sphæ.

L. 2. c. 70.

phiæ. Magna hæc diſſentio de terreſtris ambitus menſura, & quæuis opinio maximorũ virorũ autoritate ſe tuetur, qué ſequamur? dubiũ. cauſam quæris diſſenſus? æque hoc in dubio. Nonius & Peucerus diuerſis vſos ſtadijs volunt. Maurolycus & Philander è paſſuum diuerſitate ſtadiorum diſcrimẽ ortum arbitantur. Maurolycus multum deſudat vt conſenſum faciat, at fruſtra: non patiuntur: Multa docent paſſuum genera, verum. ab ſtadiorũ quærimus ſaltẽ pedum. Paſſibus (quod ſciam) non dimetiebãtur Græci ſuũ ſtadiũ, ſed pedibus aut ὀργυιαις. eſt autem ὀργυια extenſionis manuũ cũ interiecto pectore menſura ſex pedes cõplectens, familiaris noſtris nautis menſura in dimetienda Maris aut fluminũ profunditate. paſſum multi vertunt, neſcio quã recte, iudicent eruditi: Xilander in Strabone tranſferendo vlnam ſemper vertit. Stadium pedes habet 600. inquit Herodotus bene antiquus Græciæ ſcriptor, idé Suidas multò recentior. ſtadiũ continet orgyas 100. orgya cubita 4. cubitũ pedẽ 1½. vel 24. digitos, atteſtante Herone Mechanico (ſaltẽ eius Scholiaſte) ex infima opinor Græciæ antiquitate. In tanta opinionũ diuerſitate conijciamus & nos, quæ tanti diſſenſus cauſa, & qué ex his ſequamur. Mittamus autem Ariſtotelẽ cuius aſſertio ſolo nomine defenditur. diſcutiamus Eratoſthené & Poſidoniũ quorũ opiniones certis fundamentis niti videntur. Cauſam diſſenſus exiſtimamus, quod Eratoſthenes & Poſidonius locorũ diſtantias quas tradunt dimenſi non ſunt, ſed ex vulgari peregrinantiũ traditione acceperunt (præterquã quod Poſidonius in

Strab. pa. 65.

Nonius de Crepuſcul. Peuc. de dim. terræ. Maur. dial. 3. Coſmogr. Phil. in vitr.

Eratoſt. & Poſid. excutiuntur.

ſuis etiam obſeruatis longius aberrauit.) Ptolomæus autē ex dimenſis interuallis ſuam firmatam eſſe ſententiam docet 5. c. 6. l. Geograph. ſic habet. Cognitæ terræ latitudo partiū eſt 76. $\frac{1}{3}$. $\frac{1}{12}$. vel integrorū graduum 80. ſtadiorū 40. millium, vt vnus gradus cōplectatur ſtadia 500. quod ex accuratioribus dimenſionibus deprehenſum eſt. Eratoſthenem in deſignandis locorū interuallis longius aberrontem inſectatur Hipparchus, & incredibilē locorū ignorantiam refellit, atteſtante Strabone l. 1. Ab Alexandria Carthaginem vſq; vltra 13. ſtadiorū millia numerat Eratoſthenes, cum non ſint plura 9. millibus inquit Strabo. Poſidonius quod ponit interuallum, inter Rhodum & Alexandriam 5000. ſtadiorū, ex nautarum opinione deſumptū quorū alij. 4000. alij 5000. tribuunt, fatetur apud Strabonē Eratoſthenes, ſe autem deprehendiſſe ait Sciotericis inſtrumentis non eſſe maius 3750. Strabo paulo etiam minorem facit diſtantiam, ſtadiorum 3640. Ptolomæum itaque qui accuratioribus dimentionibus ſuā cōprobatā & ſtabilitam fatetur opinionē veritati propius acceſſiſſe par eſt vt credamus. Frāciſcus Maurolycus Meſſanenſis Abbas, dum Poſidonio aduerſus Ptolomeum patrocinatur incautus decipitur. ſuſpectā habet Ptolomæi fidem in deſignanda Rhodi latitudine quā poſuit graduum 36. corruptos in tabulis Geographicis eſſe numeros monet, quod certiſſimū. in Rhodienſi latitudine quī probet videamus. Poſidonij inquit obſeruata non minorem faciunt eius latitudinem grad. 38. $\frac{1}{2}$. niſi in Alexandrina etiam latitudine falſus ſit Ptolomæus, quod non poſſe fieri exiſtimat

P. 86.

Ptol. contra Poſidonium defenſus. Maurolycus taxatur.

exiſtimat Maurolycus. At nos contra dicimus Ptolomæum aduerſari huic latitudini, non ſolum in libris Geographicis ſed paſſim in libris magnæ conſtructionis præſertim 6.c. l.2. vbi eandem Rhodi latitudinem quã in Geographicis tradit, adijcit etiã maximi diei quantitatem, Meridianas gnomonum vmbras tum æquinoctiales tum Tropicas, quæ omnia id ipſum euincunt. eandé etiam latitudinem ſæpiuſcule in Planiſphærio ponit, niſi dixeris in eo etiã transferendo Maſſem interpretem Arabicũ, aut qui ex Arabico Latinũ fecit Rodolphũ Brugenſem nobis impoſuiſſe, vſq; dum ſumus ergo pares. At poſidonio (inquit) fauent Proclus, & Eudoxi Cnidij obſeruata à Stabone tradita: hoc quid ſit videamus: Poſidonius (inquit Strabo) refert ſe de excelſa quadam domo in vrbe à freto Gaditano ad 400. ſtadia diſtante, ſtellam vidiſſe quam exiſtimauit eſſe Canobum, & qui inde verſus meridiem ex Hiſpania paululum progreſſi ſunt, fatentur ſe eam cernere. Eſt etiam in Cnido Eudoxi ſpecula, non multo domibus ſublimior, ex qua is fertur Canobum ſpectaſſe. Eſt autem Cnidus in Rhodio Climate in quo & Gades & eius ora maritima. hæc Strabo. Quid hinc contra Ptolomæum? Canobum in Cnido conſpici poſſe? non negamus. Cnidum in Rhodiaco Climate? agnoſcit Ptolomæus: neque enim maiorem grad. 36. 15. m. ſtatuit l. 5. Geographi. annon in Cnidia etiam latitudine falſus Ptolomæus? Non maiorem eſſe Rhodienſem latitudinẽ quàm Ptolomæus poſuit, è Proclo etiã conuincitur. longiſſimũ diem Rhodi horarũ 14 ½, facit Proclus, æqualem

Str. l. 2, p. 82

Ptolo-

Ptolomæus Rhodo & Cnido attribuit. Idem Stabo, nisi quod semel horarum 14. posuit, vnde sequeretur minorẽ habere latitudinem. sic autem habent Procli verba. In Rhodio horizonte ita Tropicus ab horizonte dirimitur, vt cum circulus vniuersus in 48. partes secetur, 39. supra horizontem appareant, 29 sub terra lateant. Ex qua diuisione sequitur vt apud Rhodios longissimus dies horas æquinoctiales habeat $14\frac{1}{2}$. nox autem $9\frac{1}{2}$. Nõ inficior Posidonij traditionem de portione Meridiani verticibus Rhodi & Alexandriæ intercepta, Plinium, Proclũ alioſque fefelliſſe. Alfraganus ſecundum ſuum Clima ducit per Cyprũ & Rhodum, eiuſdem maximum diem facit horarum $14\frac{1}{2}$. latitudinem $36\frac{2}{3}$. exiguâ admodum differentia ab ipſo Ptolomæo. Ipſe etiã Maurolycus dum in Dialogis Coſmograph. parallelos numerat, eum qui per Rhodum ducitur latitud. $36\frac{1}{12}$. facit, longiuſculè à Poſidonio diſcedens. Eratoſthenis etiam obſeruationes Poſidonio plurimũ aduerſantur. Interuallum Rhodi & Alexand. 3750. ſtadiorum ſciotericis gnomonibus deprehendit Eratoſthenes. hoc quid ſit diſpiciamus. Latitudinis differẽtiã inter hæc loca, ſciotericis ſuo more deprehendit graduum $5\frac{1}{14}$. plus minus. huic differentiæ ex aſſumpta ſua de ambitu terræ menſura (700. ſtadia cuique gradui numerans) 3750. ſtadia tribuit. Neq; enim aliud artificium nouimus quo per ſcioterica ſtadiorũ numerus inter duo loca inueſtigari poſſit, niſi prius ſtadiorum numerũ vel totius terræ circumferentiæ, vel datæ eius parti conuenientem aſſumpſerimus. Videamus iam nunc ecquid ex ipſius

Procl. de Sphæra.

ſius Eratoſthenis obſeruatis comprobare poſſimus, non poſſe Poſidonij nedum Eratoſthenis de menſura terræ opinionem defendi. Obſeruationé autem de differentia latitudinis Alexandriæ & Syenes non excutimus, vt probemus, ex ipſius Eratoſthenis aſſumptis, non poſſe ambitum rerræ vltra 241610. ſtadia extendi, quod demõſtrat Petrus Nonius 18.c.1.2. de Nauigatione. neq; quærimus quàm recte horũ locorũ interuallum faciat ſtadiorum 5000. cùm Solinus ab Oceano ad vſq; Meroem non numeret amplius 620. milliaribus, quæ ſunt ſtadia 4960. Meroë autem longe vltra Syenem ſita eſt. Aliam longe huius noſtræ probationis rationé inimus. Vnicum hoc poſtulamus, quantũ ſpatium ſui orbis Solis diameter occupat, per ſimile ſpatium in orbe terreſtri gnomones fieri vmbrarum expertes, cum Sol verticibus imminet. Hoc ſi concedatur (quod vltro apud Cleomedem fatetur Poſidonius) euicimus. Solé in principio Cancri conſtitutũ, Syenes vertici imminere, ibiq; & ad 300. circiter hinc inde ſtadia, gnomones vmbrarũ immunes facere tradit Eratoſthenes. Videamus quantã ſui orbis partem Solis diameter ſubtendat, hinc enim, ſi vera ſit quæ præceſſit Eratoſthenis poſitio, elicietur ambitus terræ menſura. Firmicus Maternus, Solis Lunæq; diametrũ non minoré vno gradu facit: at at aberrat longius, maioré iuſto quãq; nos poſtulamus quantitatem aſcripſit, Ægyptij per inſtrumenta hydroſcopica inuenerunt Solis diametrũ occupare $7\frac{1}{50}$. partem ſui orbis. quodſi $7\frac{1}{50}$. parti totius ambitus terræ reſpondeant ſtadia 300. totus ambitus non erit maior

Fir. Mater.

Cleomedes.

ior 225000. Instrumenti huius fabricam & vsum docet Proclus c.3 designationũ Astronomicarũ. multa Theon de eo in Com. in 5 l. Alm. Ptol. & Maurolycus Dial. 3. Cosmogr. At hoc obseruationis genus Ptolomæo non probatur. multis obnoxiũ erroribus ostendunt Theon & Proclus. vlterius ergo discutiamus oportet. Ptol. 5. l. Almag. tradit diametrũ Solis æquari Lunæ cum est in maxima à terra distantia eamq; esse minutorũ 31. m. 20. sec. quantam & ante eum Hippar. defiuiuit, vt nullo modi defendi possit error Aristarchi Samij qui Lunæ diametrũ graduũ 4. supposuit, accuratius etiã perquirens Albategnius, semidiametrũ Solis statuit in Apogæo sui excentrici 15. m. 40. sec. in perigæo 16. m. 50. sec. vltra hoc Copern. inuenit diametrũ in maxima distantia 31. m. 48. sec. cũ proximè ad terrã fertur 33. m. 54. sec. sequamur quod videtur in medio positũ. accipiamus diametrũ 32. m. vnde ex superius præmissis si 300. stadia respõdeant 32. m. totus ambitus nõ erit maior stadijs 201500. minor ambitus quã Posidonius, multo minor quàm qué Eratosthenes posuit. Hæc de mensura terrestris ambitus è Græcorũ traditionibus dicta sint, saluo maximorũ virorũ iudicio. Nostrates 60. milliaria vel 20. Leucas vni gradui tribuunt, vt tota circũferentia sit milliariorũ 21600., idque ad Ptolomæi mentẽ exacte congruit. Pedẽ enim nostrũ Anglicũ, Græcorũ pedi æqualem inuenimus, cõparatione facta cũ Græcorũ pede quem Agricola & alij ex antiquis monumentis tradiderunt. milliare autem 5000. pedes complectitur nostrates. stadium 600. Græcos, si mensuram stadij per 500. (tot enim

c.13.

De mag. & dist. Sol. & Lunę.

enim ſtadia Ptolomæus vni gradui tribuit) item ſi milliaris menſuram quæ eſt 5000. pedũ per 60. (quot nos milliaria vni gradui damus) multiplices, par vtrinq; numerus producitur 300000ſc. pedum: vt ex his fundamentis extra controuerſiam ſit, receptam Noſtratium Nautarum opinionem cũ Ptolomaica conuenire. Itali 60. item milliaria vnius gradus menſuram faciunt, ſed menſura minor eſt Ptolomaica. Germani 15. tribuut vni gradui quorũ ſingula quatuor milliaria Italica complectũtur: æquè infra Ptolomæum. Nam ex eorum traditione vni gradui reſpondent non amplius 480. ſtadijs quum ſingula milliaria Italica complectantur 8. ſtadia. Appianus docet 15. milliaria Germanica æquari 60. Italicis: 60. Italica 480. ſtadijs. minor menſura Ptolomaica 20. ſtadijs, milliaribus Italicis 2 ½. Hiſpani vni gradui tribuunt Leucas, partim 16 ⅔. parte 17 ½. Quanta ſit eorum menſura comparata ſtadijs Græcorum vel milliaribus noſtris, Italicis aut Germanicis nondum habeo cõpertum. Videtur Nonius Leucam Hiſpanicam Schœno aut paraſangæ æquare, quod ſi verũ ſit, qui Leucas 16 ⅔. tribuunt vni gradui, æqualẽ mẽſuram Ptolomaicæ aſſumunt: qui 17 ½. aliquanto maiorem. Reſtant Arabum traditiones de hac re. Eorum antiquiores circumferentiæ totius terræ addixerunt milliariorum 24000. ſiue paraſangas 8000. ita vt vnus gradus cõplectatur 66 ⅔. milliaria. hac menſura vtitur Alhazenus in fine libelli de crepuſculis. Alfraganus & Recenciores à temporibus Almamonis 20400 milliaria amplexi ſunt, vt gradus vnus 56 ⅔. milliaria contineat. Abilfedea in principio operis

Appian. in Coſmog.

Cap. 2. l. 1 De nauig. ratione.

Christ. in Alfrag.

Geographici memorat, præcepto Almanonis regis Arabum, seu Caliphæ Babylonij, quosdam ablegatos qui in campis Singar & vicinis maribus, iuxta rectum iter & poli situm obseruarent quot milliaria responderent vni gradui cœlesti, & deprehensum esse ab ijs in conficiendo vno gradu 56. milliaria sine vlla fractione, nonnunquam præter 56. tertiam partem milliaris requiri, hoc est 1333 $\frac{2}{3}$. cubita. Quæ sit ratio milliaris Arabici, ad nostra, Italica, vel Germanica comparati, non est explicatu facile, 10 stadia vnumquodq; complecti arbitramur. Coniecturæ hæc ratio. Parasanga (vt Iacobus Christman. ex Abilfedea magno Arabum Geographo nos docet) tria milliaria Arabica continet, tam apud vetustiores quã recentiores. Parasanga autem (vt ex Herodoto, Xenophonte & alijs patet) triginta stadia cõplectitur: ideo milliare vnum 10. stadia comprehendit.

Agricola.

Hoc accedit ad faciendam fidem. Duo Cubitorum genera Græci tradiderunt; cõmune siue mediocre, quod pedi Græco 1 $\frac{1}{2}$. æquatur, & continet digitos 24. qualium pes habet 16. Alter cubitus erat regius, in vsu apud Persas, maior communi tribus digitis. Alfraganus autem docet milliare, Arabicum continere 4000 cubita prout cubitũ est in mediocri mensura. hic cubitus si sit æqualis Græco continebit vnũ milliare 6000. pedes Græcos quot 10. stadia cõplectũtur. Hæ coniecturæ si veræ sint, nõ est assentiendum summis viris P. Nonio & Iacobo Christm. qui Arabicum milliare æquant Italico. In tanta opinionum diuersitate de mensura terræ sequatur quisq; quem libeat. nisi autem Arabum recentiores nobis obsta-

Nonius de Crep. prop. 19 Chr. ad 10. c. Alfrag.

rent

rent (qui dimenſis etiam itineribus ferunt ſuam ſententiam comprobatam, non dubitaremus Ptolomæi opinionem cæteris anteponere. omnium opinionũ quæ aliquid habent probabilitatis hæc eſt Synopſis.

Ambitus vniuerſæ terræ eſt ſtadiorũ.

- 252000 Straboni. Hipparcho.
- 250000 Eratoſtheni.
- 240000 Poſidonio & Antiquioribus Arabum.
- 180000 Ptolomæo & noſtratibus.
- 204000 (2800) Arabibus recentior.
- 172800 Italis & Germanis.

Vnius gradus menſura eſt ſtadiorum.

- 700 Straboni. Hipparcho.
- 694 4/9 Eratoſtheni.
- 666 2/3 Poſidonio & Arab. antiqu.
- 500 Ptolomæo & Noſtratibus.
- 566 2/3 Recent. Arab. (563 1/3)
- 480 Italis. Germanis.

Milliare eſt ſtadiorum. { 8 vt Italicum. / 8 1/5 Anglicum. / 10 Arabicum. / 32 Germanicum.

Pars quarta.

De Globorum vſu.

HActenus de Globis, eorum circulis, & inſtrumentis ad eorũ vſum neceſſarijs. Sequitur vt quam varius & multiplex ſit eorum vſus videamus, & ad praxim deueniamus. Eorum vſus Aſtronomiæ, Geographiæ, & artis nauigandi cognitionem expetentibus apprimè neceſſarius. Nam & ad inueniendum Solis locum, longitudines, latitudines, & poſitiones locorum, dierum quantitates & horas, itemq; ad inueniendam longitudinem, latitudinem declinationem, aſcenſiones rectas & obliquas, amplitudinem ortus & occaſus Solis & Stellarũ, aliaq; huiuſmodi propemodum infinita methodum tradunt faciliman. Præcipuos vſus breui percurremus, ſingulos pertractare nimis prolixum. Hæc autem omnia quæ Globorum vſu deprehenduntur, multo accuratius numerorum ope per doctrinam triangulorum planorum & Sphæricorum inueniri poſſe, norunt matheſeos periti. ſed hoc artificium, præterquam

terquam quod tædium ob prolixitatem afferat, multam in mathematicis exercitationem deſiderat. at per Globorum praxim, prompte, expedite, vix aliqua matheſeos cognitione adhibita, inueniri poſſunt.

De longitudine, latitudine, diſtantia, & poſitionis angulo vel ſitu locorum in Globo terreſtri expreſſorum. Cap. I.

TErminum metiendæ longitudinis locorum, antiquiores à Ptolomæi vſq; temporibus poſuerunt Meridianum per Fortunatas Inſulas ductum, Canarias hodie dici receptum eſt à plurimis, quam rectè non examinamus. obiter monemus latitudinē Ptolomaicam Fortunatarum, longiuſcule aberrare à latitudine Canarienſiū, propius accedere ad latitudinem Inſularum quas hodie vocant Capitis viridis. Fortunatas omnes Ptolomæus intra gradum 10. 30. m. & grad 16. latitudinis boreæ poſuit. Canariæ autem 27. minimum ab æquatore gradibus remotæ ſunt. Arabes intimum receſſum Oceani Atlantici principium numerandæ longitudinis ſtatuerunt, à quo Fortunatas inſulas grad. 10. ad occidentem diſtare, Iacob. Chriſtm. ex Abilfedea docet. Recentiores plurimum ab Inſulis quas Canarias vocant longitudines numerant. Nonnulli ab ijs quas Acores nominant: & ab hoc termino in his Globis lōgitudines numerātur. Eſt igitur longitudo arcus æquatoris interceptus meridianis dati loci &

Inſulę de Cabo verde.

Longitudo quid.

Inſulæ

Insulæ S. Michaelis (quæ vna est Acorensium,) vel alterius cuiusuis loci vnde longitudinis initium determinare solent. Si verò longitudinẽ alicuius loci in Globo expressi cognitam velis, eundem locũ meridiano adiunge, & signato loco æquatoris quem meridianus pertransit, numera à Meridiano Insulæ S. Michaelis gradus æquatoris ad eum locũ interceptos, tot enim sunt gradus longitudinis dati loci. Eodem modo & differentiam longitudinis inter duo quæuis loca expressa mensurare poteris. est enim differentia longitudinis nihil aliud quam arcus æquatoris interceptus duorum datorum locorũ meridianis. Differentiam hanc lõgitudinis obseruatione inuestigandi multi multos modos tradere conati sunt. Certissimã rationem esse per eclipses præsertim lunares eruditioribus in confesso est. sed eclipses rarò accidunt, rarius conspiciuntur, rarissimè ac paucissimis locis ab artificibus obseruantur, vnde paucorum locorum longitudines hac ratione designatæ inueniuntur. Orontius & ante eum Ioannes Wernerus, ex cognito, vt præsupponũt, Lunæ motu; eiusq; transitu per alicuius loci meridianum, differentiam longitudinis dari posse arbitrantur. Labilis & inconstans ratio, multis subiecta difficultatibus. alij aliâs aggressi sunt. nempe per obseruatum spatium horatũ æquinoctialium inter duorum locorũ meridianos: quod deprehendi posse arbitrantur per horologia vel automata, vel hydraulica, vel arenaria, vel huiusmodi alia. Hæc omnia iampridẽ excogitata, accuratiori examine & iudicio perpensa ab eruditioribus omnibus (saltem maturioris iudicij) reiecta

reiecta ſunt & reprobata, neque enim quod deſideramus præſtabunt. At nugiuendæ impoſtores, hæc aut alia his peiora magna cum oſtentatione diuulgant, & magno ære diuendunt, melioris notæ & conditionis hominibus, at minoris eruditionis ac iudicij. horum inſtrumentorum errores & incertitudines non diſcutio. obiter moneo vt (quod vulgo dicunt) caueant emptores, ne emuncti ære ſero ab impoſtorum laqueis ſe expediant. Apageſis nugaciſſimos homines cum ſuis tricis & quiſquilijs.

De latitudine locorum. Cap. 2.

LAtitudo eſt diſtantia qua Zenith aut vertex alicuius loci ad æquatore remouetur. hanc ſi velis cognoſcere, expreſſum aliquem locum in Globo, Meridiano applica, & numera gradus in Meridiano quibus idem locus ab æquatore diſtat. tanta enim erit dati loci latitudo. Hoc etiam aduertere licebit, latitudinem cuiuſuis loci æqualem eſſe eleuationi poli eiuſdem loci. quot enim gradibus vertex alicuius loci diſtat ab æquatore, totidem polus ab Horizonte attolletur, ſi eiuſdem loci verticem ita ſtatuas, vt 90. gradibus ab Horizonte vndiquaque diſtet.

Latitudo quid.

De

De Distantia duorum locorum, & angulo positionis, vel situ inueniendo. Cap. 3.

SI Terrestrem Globum ita statuas, vt alterius datorum locorum vertex 90. gradibus ab Horizonte vndiquaque remoueatur: & quadrantem altitudinis eidem vertici affigas, deinde eousq; quadrantem circumagas, donec alterius loci verticem pertranseat: gradus quadrantis, duorum locorum verticibus intercepti, in stadia, milliaria aut Leucas (vt libuerit) conuersi, datorum locorum distantiam indicabunt. Quadrantis autem terminus ad Horizontem indicabit partem vel plagam mundi in quam alter locorum ab altero vergat, siue angulum (vt vocant positionis. Est enim positionis angulus is qui comprehenditur meridiano loci alicuius, & circulo maiori per vertices datorum locorum transeunte, huius quantitas in Horizonte numeranda.

Angulus positionis quid.

Exemplum.

Londinum in Angla longitud. est gr. 26. latitudinis borealis graduum 51 ½. ab hoc quæratur distantia, & positionis angulus ad insulam S. Michaelis quæ vna est Acorensium, hoc vt inueniamus, eleuetur polus boreus grad 51 ½. quanta est latitud. Londini: quadrantem altitudinis affigamus vertici, hoc est 51 ½. grad. bor. ab æquinoctiali, inde circumferamus quadrantem hunc, vsque dum transeat per insulam S. Michaelis. & deprehendemus distantiam interceptam verticibus Londini & S. Michaelis esse

graduum

graduum 12. 40. m. proxime, Leucarum noſtratium 280. & ſi obſeruemus in qua parte Horizontis quadrantis terminus inſiſtat deprehendemus angulum poſitionis eſſe inter meridiem & occidentem grad. 50 proxime, inter Africum & Africo ad Fauonium, Southweſt, and Southweſt and by Weſt, vnde ſitus huius inſulæ à Londino patebit.

De Altitudine ſolis aut ſtellarum. Cap. 4.

ALtitudo eſt diſtantia Solis aut alicuius ſtellæ ab Horizonte, numerata in circulo maiore per verticem alicuius loci & corpus Solis aut ſtellæ tranſeunte. Obſeruandam eſſe per Radium, Quadrantem, aut aliud huiuſmodi inſtrumentum, adeo notum eſt, vt fruſtra monuerim. Gemma Friſius per Gnomonem ſphæricũ Solis altitudinem obſeruare docet, ſed hic modus obſeruandi non ita multum placet, multis obnoxium erroribus qui periculum fecerit facile deprehendet. *Altitudo quid.*

De loco Solis inueniendo, eiuſque declinatione ad diem datum. Cap. 5.

COgnitum menſis diem in calendario quod in Horizonte Globorum deſcribitur quæras; huic è directo in eodem Horizonte reſpondet ſignum Zo-

diaci eiusq; gradus quem Sol eodem die occupat. Sed si annus sit bissextilis, post 28. Februarij, accipe Gradum eius signi qui adscribitur diei datum diem proxime sequenti. vtpote si scire velis quem gradum Zodiaci Sol obtinet ad diem 29. Februarij, accipiendus est is gradus qui primo diei Martij adiungitur, & pro primo Martij secundum accipe, & sic consequentur. Hoc tamen potius suaserim, vt cum Solis locus accurate sit indagãdus, ex tabulis ad singulos dies cuiusq; anni ritè calculatis (Ephemerides vulgo vocant) locum Solis inuestiges. neq; enim per Globorum praxim, ea accuratione quæ sæpe requiritur, deprehendi poterit. Locum Solis inuentum Meridiano applica, numeraq; in meridiano gradus quibus Solis locus ab æquatore distet, tot enim erũt gradus Solaris declinationis ad datum diem. Est enim Declinatio tum Solis tum cuiusq; syderis, distantia eiusdem ab æquatore, numerata in meridiano. Declinationem Solis multo exactius inueniemus ex tabulis qualibus Nautæ vtuntur, in quibus ad singulos dies Meridiana Solis declinatio, quæ & quanta sit exprimitur. Vnum hoc obiter moneo de hisce tabulis, vt recentioribus plurimum vtamini. omnes enim post aliquod temporis spatium suos habent errores, atque ideo moneo, quia vidi nonnullos qui antiquioribus tabulis magna diligentia & cura manuexaratis, (qui sæpiuscule 10. min. interdũ amplius, à recentiori calculo & ab ipsa veritate aberrant) studiose & cum quadam quasi religione vterentur. Hi magno labore & industria magnos & non negligendos errores sibi cõparant.

Quid declinatio.

De

De inuenienda loci latitudine, ex obseruata meridiana altitudine Solis aut stellarum, Cap. 6.

MEridianam Solis altitudinem obseruaradio, quadrante, vel huiusmodi quouis instrumento, & Solis locum in ecliptica Globi inuentum meridiano applica, & Meridianum hac illâc in suis fissuris consistentem circumducas, vsq; dum idem Solis locus totidé gradibus ab horizonte attollatur, quot sunt obseruatæ Solis altitudinis: in hoc Globi situ polus alter, supra Horizontem eminens, indicabit latitudinem loci in quo fueris. huius rei hoc esto exemplum.

Iunij die 12. iuxta stilum veterem, Sol obtinet initium Cancri & maximam habet declinationem ad boream graduum sc. 23 ½. eo die obseruata sit Solis altitudo meridiana gr. 50. quærimus loci latitudinem in quo facta est hæc obseruatio. Illud autem sic inueniemus. Initium Cancri meridiano adiungamus, quem hâc illâc circumducemus, donec idem principium Cancri meridiano applicatum, gradibus emineat ab horizonte 50. (quot sunt Meridianæ Solis altitudinis obseruatæ) in hoc situ Globi polus boreus eleuabitur grad. 63 ½. & tanta erit loci latitudo in quo facta est illa obseruatio. *Exemplum.*

Non dissimilis est modus quo vulgò Nautæ locorum latitudines indagare solent, per meridianas solis altitudines, & tabulas declinationum: quem

missum facimus, quòd eius explicatio ad nostrum nõ spectat institutũ, & adeo vulgo notus, vt hoc loco eius tractatio non sit necessaria. Idem effeceris obseruata altitudine meridiana alicuius stellæ in Globo expressæ. si enim Globum ita constituas, vt stella obseruata Meridiano applicata tanto ab Horizonte interuallo distet, quanta est eius altitudo meridiana obseruata, poli ab Horizonte eleuatio latitudinem loci demonstrabit. Sed moneo vt per meridianam Solis altitudinem potius locorum latitudines exquiras, quam per stellarum fixarum altitudines, quoniam stellarum declinationes plurimum vt supra probatum est immutantur, nisi siquæ per recentiores obseruationes suis locis restitutæ sunt. Alij non solum per Meridianam Solis aut Syderis altitudinem, sed per duplicem eius obseruationem, cognito temporis interuallo, aut horizontali distantia inter duas obseruationes, id ipsum facere pollicentur, sed hæc praxis prolixa est & dubia, præterquàm quod obseruationum multitudo multis erroribus, & difficultatibus est obnoxia. in hoc tamen genere, faciliorem aliquam methodum non noui, quam sit quæ sequitur.

Cognito Solis aut stellæ loco, & obseruata duplici eius altitudine cum temporis interuallo, latitudinem loci exquirere.

Alius modus. Primum intercepto cruribus circini complemento altitudinis prioris obseruationis, (est autem complementum altitudinis differentia quâ obseruata altitudo minor est 90. grad.) alterum circini pedem figi-

ſigimus in eo eclipticæ gradu quem Sol eo die occupat: altero delineamus arcum periferiæ in ſuperficie Globi, vergentem quadammodo in occidentē, ſi obſeruatio ſit antemeridiana: vel in ortum ſi fuerit pomeridiana. Facta autem ſecunda obſeruatione & interuallo temporis notato, Solis loco Meridiano applicato, voluatur Globus verſus ortum, donec tot gradus æquatoris Meridianum pertranſeant, quot ſpatio temporis inter duas obſeruationes elapſo congruent, numerādo cuiq; horæ gradus æquinoctiales 15. ſignatoq; loco in ſolaris declinationis parallelo quem Meridianus poſt hanc conuerſionem interſecat: fixoq; ibidem altero pede circini, ad complementum ſecundæ obſeruationis extenſi, deſcribatur arcus periferiæ priorem periferiam interſecans, communis interſectio harum periferiarū verticem loci in quo fueris indicabit: cuius ab æquatore diſtantiam ſi numeres in Meridiano, patebit loci latidudo. Idem efficies, ſi ad eundem modū cum data & bis obſeruata aliqua ſtella operabere. aut ſi ad complementa duarum ſtellarum quæ eodē tempore obſeruantur, duas circumferentias ſeſe interſecantes deſcripſeris.

De Aſcenſione recta & obliqua Solis & Stellarum inuenienda ad datam quamlibet loci latitudinem & tempus. Cap. 7.

Aſcenſio & deſcenſio quid.

Aſcenſio Solis vel ſtellæ eſt gradus æquatoris qui cum ijſdem ſupra horizontem emergit, Deſcenſio eſt æquatoris gradus qui cum ijſdem deprimitur

primitur infra Horizontem. Vtraq; vel est recta vel obliqua. Recta est gradus æquatoris qui ascendit aut descendit cum Sole aut Sydere in Sphæra recta.

Ascensio recta.

Obliqua.

Obliqua qui cum ijsdem oritur aut occidit in obliqua Sphæra. Illa simplex, est enim vnicus situs Sphæræ rectæ: hæc multiplex ac varia, prout Sphæra varijs modis inclinatur. Si ascensum rectum aut descensum cupis cognoscere alicuius stellæ ad datum aliquod tempus & locum; adiunge Meridiano materialis Globi stellã datam, & æquatoris gradus qué meridianus in eò situ intersecat indicabit ascensum & descensum rectum, idem enim gradus qui cum aliqua stella oritur in Sphæra recta, idem occidit etiam & cœlum mediat cum eadem. Ascensionem vel descensionem obliquam si velis cognoscere, Globum statuas ad latitudinem loci, stellamq; orientali Horizontis parti applica: Horizon signabit in æquatore gradum ascensus obliqui. occidenti item adiunge eandem stellam, Horizon in æquatore monstrabit descensum obliquum. Eodem plane modo Solis aut alicuius gradus ecliptice ascensioné obliquam inuenire oportet. cognito prius ex supra tradidis loco Solis. Hinc reperiri poterit differentia ascensionis rectæ & obliquæ vnde diuersa oritur dierum longitudo.

Exemplum.

Exempli causa Sol primum Capricorni gradum obtinet die 11. Decembris iuxta stilũ veterem, huius gradus ecliptice cognitam volo ascensionem rectam & obliquam in latitudine 52. gr. Primum igitur Capricorni gradum applica Meridiano: vbi Meridianus intersecabit gradum æquatoris 180, qui

erit

erit gradus aſcenſionis rectæ. ſed ſi Globo conſtituto ad latitudinem grad. 52. eundem gradum Capricorni Horizonti adieceris, inuenies oriri cum eo grad. æquatoris 303. 50. m. proxime, & differentia aſcenſionum 270. gr. rectæ, & 303. gr. 50. m. obliquæ, erit grad. 33. 50. m.

Quomodo inueniatur, ad datum tempus & locum, differentia horizontalis inter meridianum & circulum verticalem Solis aut ſtellæ alicuius, quem vocant Azimuth. Cap. 8.

OBſeruata altitudine Solis aut Stellæ quacunque vis hora, Globum ad latitudinem loci compoſitum voluas vſq; quò obſeruata ſtella, aut Solis locus, tantum ab horizonte emineat quanta eſt obſeruata altitudo. hoc autem inuenies ſi quadrantem altitudinis vertici dati loci affixum, vna cum ſtella aut Solis loco hac illac commoueas, donec incidat in eum quadrantis gradum quem per obſeruationem in inſtrumento notatum habes. in hoc ſitu quadrantis terminus ad horizontem monſtrabit diſtantiam circuli verticalis, in quo Solem aut ſtellã obſeruaſti, à Meridiano. exempli cauſa.

Exemplum.

In latitudine Boreali grad. 51. die Martij 11. iuxta ſtilum veterem, quo tempore principium Arietis Sol occupat, obſeruata ſit eius altitudo ante merediem grad. 30. ſupra horizontem: quæritur Azimuth ſiue diſtantia Solis à Meridiano. Globo primum ad latitud,

latitud. 51. grad. posito, & quadrante altitudinis vertici affixo, voluatur deinde Globus donec principium Arietis grad 30. supra horizontem attollatur, quadrans altitudinis eidem Arietis initio applicatus, monstrabit in horizonte Azimuth Solis siue distantiam à Meridiano grad. proxime 45.

De inuenienda hora, itemq; amplitudine ortus & occasus Solis & Stellarum ad datum aliquod tempus, & latitudinem alicuius loci. Cap. 9.

SOlem in diuersis Horizontis partibus, diuersis anni tempestatibus, orientem & occidentē cernimus. Tres autem insigniores & maximè differentes habet ortus & occasus. Æquinoctialis dicitur locus ille quo Sol oritur aut occidit cum æquatorē percurrit. Solstitialis est ortus aut occasus Solis cum æstiuum tropicum describit. Brumalis vbi oritur aut occidit cum Hibernum Tropicum obtinet. Ortus & occasus æquinoctialis in omni Climate simplex est & vnicus, æquator enim horizontem in ijsdem semper punctis intersecat, quæ 90. gr. vtrinq; à Meridiano distāt. Reliqui, pro varia Sphæræ inclinatione, varij sunt & mutabiles, horæq; diuersæ. horam autem & distantiam ortus aut occasus Solstitialis, & Brumalis, aut alicuius intermedij (quam vocant amplitudinem ortiuam aut occiduam) si cupis cognoscere ad datum aliquod tempus & latitudinem loci: sic operabere. Primo statuatur Globus

bus iuxta latitudinem loci, quæsitum deinde Solis locum, ad tempus datum, Meridiano adiunge, & cuspidem indicis horarij applica 12. horæ cycli horarij, & conuerso Globo vsque dum Solis locus Horizontem ab orientali parte attingat, index in horario circulo ortus horam, Solis locus in horizonte ortus amplitudinem indicabit, quam vt diximus numerare oportet ab ipso orientis cardine, siue intersectione æquatoris & horizontis. si vertatur Globus donec idem Solis locus horizonti ab occidente accedat, hora occasus, & amplitudo occidua eodem modo deprehendetur. Si ad idem tempus eandéq; latitudinem, horam & amplitudinem ortus aut occasus, itemq; mediationem cœli alicuius stellæ in Globo expressæ, cognitam velis: Globus conuertatur (manente eadem latitudine, eodem indicis situ quo prius) vsq; dum stella data horizonti accedat, vel ab oriente, vel occidente, hora & latitudo ortus aut occasus, eodem plane modo quo in Sole deprehendetur. Si eandem stellam meridiano applices, patebit hora transitus per meridianum quam mediationem cœli vocamus. Temporis autem itemq; amplitudinis ortus & occasus Solis hoc esto exemplum.

Sole occupante principium Tauri (quod nostra ætate euenit circa diem 11. Aprilis, iuxta stilum veterem) cupio cognoscere horam & amplitudinem ortus Solis ad latitud. Bor. gr. 51. Hoc vt cognoscamus statuatur Globus vt polus boreus emineat 51. grad. ab horizonte, deinde primus gradus Tauri meridiano adiungatur, & index horarius horæ 12. cycli *Exemplum.*

horarij: postremo versato Globo versus orientem donec principium Tauri horizontem attingat: inueniemus illud punctum contingere horizontem gr. 25. proximè ad Boream Cardinis orientis, tantaq; erit amplitudo ortus Solis eo die. Index autem horarius horam 4 ½. cycli horarij monstrabit, quo tempore Solem eo die oriri dicimus.

De triplici ortu & occasu stellarum. Cap. 10.

PRæter quotidianam stellarum emersionem & depressionem ab horizonte ad mundi conuersionẽ, triplicem earum ortum & occasum solent considerare. Matutinum siue Cosmicum, Vespertinum siue Acronychum & Heliacum vel Solarem. Ortus matutinus alicuius stellæ est, cum stella supra horizontem simul cum Sole attollitur. Occasus matutinus cum stella aliqua oriente Sole è regione occidit. Ortus vespertinus est cum occidente Sole, Stella è regione ab horizonte emergit: occasus est cum occidente Sole stella vnà deprimitur. Ortus Heliacus (quem emersum rectè dixeris) est cum stella quæ prius radijs solaribus illustrata conspici non poterat; ab ijsdem emergit. Occasus (quem occultationem licet nominare) est cum Sol, Stellam aliquam motu proprio assiquitur, vt ob fulgorem radiorum eius cerni non possit. Volunt plurimi stellas fixas primæ magnitudinis oriri vel emergere, si in supero maneant hemisphærio cum Sol 12. grad.

infra horizontem deprimitur, ſtellæ autem ſecundæ magnitudinis demerſiorem Solis ad 13. grad requirunt, tertiæ magnitudinis ſi ſint 14. gr. quartæ 15. quintæ 16. ſextæ. 17. nebuloſæ & obſcuræ 18. grad. depreſſionem Solis requirunt. Ptolomæus in hac re nihil definiuit. difficilem eius determinationem rectè monet 8. Alma. c. vltimo. inæquali aeris diſpoſitione inæqualem fieri hanc diſtantiam Solis, ad emerſionem & occultationem Syderum probe aduertit. De hac vulgata ſententia ſcrupulum nobis inijcit quòd Vitello depreſſionem Solis infra Horizontem ad 19. grad. requirat vt finiatur crepuſculum veſpertininũ, nebuloſas autem & obſcuras ante finitum crepuſculum conſpici poſſe vix perſuadebunt. vtcunq; autem ſe res habeat ſequamur vulgatam ſententiam. Si igitur anni tempus quo ſtella aliqua in quotuis climate oritur aut occidit matutine vel veſpertine cognitum velis, ſic indagare licebit. Stellam datam horizonti Globi ad latitudinem loci conſtituti adiungas ab orientali parte horizontis, innoteſcet gradus eclipticæ quocum ſtella data oritur Coſmice & occidit Acronychè, & è regione ab occidente horizon indicabit gradum eclipticæ quocum ſtella data oritur acronychè & occidit matutinè. Ortus enim Coſmicus & occaſus acronychus, item occaſus Coſmicus & ortus Acronychus idem ſunt, iuxta vulgatos verſiculos.

Coſmice deſcendit ſignũ quod acronyche ſurgit.
Cronyce deſcendit ſignum quod Coſmice ſurgit.

Sed hæc ſunt latius intelligenda. neq; enim cum eodem gradu eclipticæ ſtella mane oritur & veſperi

occidit. Auſtrinæ ſtellæ gradum ortus ſui in occaſu anteuertunt: Boreales ſequuntur, ſi polus boreus ſupra horizontem attollatur, contra ſi Auſtrinus emineat. Inuento autem gradu eclipticæ quocum data ſtella oritur aut occidit, ſi eiuſdem ſigni gradum in horizonte quæras, menſem eiuſq; diem expreſſum deprehendes quo Sol eundem occupat. Ortum & occaſum heliacum ſic inuenies. Globo ad latitudinem loci compoſito ſtellam datam horizonti applices ab occidente, è regione ad ortum exquiras gradum eclipticæ qui ab horizonte attollitur gr. 12. 13. 14. aut alia quauis diſtantia quam ſtellæ poſtulat magnitudo: huius gradus oppoſitum cum Sol occuparit, ſtella ea occidit heliacè ſiue occultatur radierum ſolarium fulgore. Si conuerſè, applicatâ ſtellâ orienti exquiras eclipticæ gradum qui è regione ab occidente totidem gradibus ſupra horizontem eminet, huic oppoſitum cum Sol occupauerit, ſtella oritur heliace vel emergit è radijs ſolaribus. hos autem eclipticæ gradus ſi in horizonte perquiras, menſis & eius dies patebit cum Sol hos gradus obtinet. vnde manifeſtum erit tempus occultationis & emerſionis eius ſtellæ. exemplum hoc eſto.

Exemplum. Syrius lucida ſtella eſt præfulgeus in ore Canis maioris, huius ortus & occaſus heliacus ſiue emerſio & occultatio ſit exquirenda: ad latitud. borealem 51. gr. Syrius autem (cum ſit ſtella primæ magnitudinis) emergit ſi maneat in ſupero hæmiſphærio Sole per 12. grad. infra horizontem depreſſo. ſi igitur ſtellam hãc horizonti adijcias ab occidẽte (globo

prius

prius iuxta latitud. 50. grad. bor. conſtituto) & è regione ab ortu exquiras gradum ecliptícæ, 12. grad. ſupra horizontem eminentem (is autem eſt 11. grad. proxime Scorp.) huius oppoſitum in ecliptica gradum hoc eſt 11, ♉ cum Sol occuparit, ſtella illa emergit è radijs Solaribus. hunc autem grad. ♉ Sol obtinet circa 21. diem Aprilis. eo igitur tempore fit Syrij ortus heliacus. Si eodem modo operabere adijciendo ſtellam hanc horizonti ab oriente innotefcet occaſus heliacus ſiue occultatio. Non abſimilis eſt ratio inueſtigandi crepuſculorum initia & fines, ea autem ſequitur,

De inueniendo crepuſculorum initio & fine ad datum quoduis tempus & latitudinem loci. Cap. 11.

CRepuſculum definiunt dubiam lucem inter diem & noctem ante orientem & poſt occidentem Solem. Alterum vocant Matutinum, alterũ Veſpertinum. Illius initium & huius finis æquali tẽporis ſpatio ab ortu & occaſu Solis remota ſunt. vtcunq; duratio interdum maior ſit interdũ minor in vtriſq;. Æſtate enim longiora ſunt crepuſcula, hyeme breuiora. menſuram vulgo faciunt cum Sol 18. grad. infra horizontem latet. P. Nonius recte monet non poſſe dari certam aliquam menſuram. pro diuerſa aeris affectione, atq; altiore vel depreſſiore vaporum à terra eleuatione variam eſſe aduertit. Vitello vt ante eum Alhazenus graduum 19. occultationem poſuerunt. Vtcunq; ſe res habet ſe-

quamur

occidit. Auſtrinæ ſtellæ gradum ortus ſui in occaſu anteuertunt: Boreales ſequuntur, ſi polus boreus ſupra horizontem attollatur, contra ſi Auſtrinus emineat. Inuento autem gradu eclipticæ quocum data ſtella oritur aut occidit, ſi eiuſdem ſigni gradum in horizonte quæras, menſem eiuſq; diem expreſſum deprehendes quo Sol eundem occupat. Ortum & occaſum heliacum ſic inuenies. Globo ad latitudinem loci compoſito ſtellam datam horizonti applices ab occidente, è regione ad ortum exquiras gradum eclipticæ qui ab horizonte attollitur gr. 12. 13. 14. aut alia quauis diſtantia quam ſtellæ poſtulat magnitudo: huius gradus oppoſitum cum Sol occuparit, ſtella ea occidit heliacè ſiue occultatur radierum ſolarium fulgore. Si conuerſè, applicatâ ſtellâ orienti exquiras eclipticæ gradum qui è regione ab occidente totidem gradibus ſupra horizontem eminet, huic oppoſitum cum Sol occupauerit, ſtella oritur heliace vel emergit è radijs ſolaribus. hos autem eclipticæ gradus ſi in horizonte perquiras, menſis & eius dies patebit cum Sol hos gradus obtinet. vnde manifeſtum erit tempus occultationis & emerſionis eius ſtellæ. exemplum hoc eſto.

Exemplum. Syrius lucida ſtella eſt præfulgeus in ore Canis maioris, huius ortus & occaſus heliacus ſiue emerſio & occultatio ſit exquirenda: ad latitud. borealem 51. gr. Syrius autem (cum ſit ſtella primæ magnitudinis) emergit ſi maneat in ſupero hæmiſphærio Sole per 12. grad. infra horizontem depreſſo. ſi igitur ſtellam hãc horizonti adijcias ab occidẽte (globo

priu

latit.50. gr.Bor. conſtituto) & è regione ab ortu exquiras gradum eclipticæ, minimo quouis interuallo, minus 12.gra.ſupra horizontem eminentem (is autẽ eſt 11.proximè gr.Scorp.) huius oppoſitum in ecliptica gradum, hoc eſt 11. ♉ cum Sol occuparit, ſtella illa occultatur radijs Solaribus. hunc autem gradũ ♉ Sol obtinet circa 21. Aprilis, circa quod tempus occaſum heliacum Syrij eſſe dicimus. Si eodẽ modo operabere, adijciendo ſtellam hanc horizonti ab oriente, innoteſcet eius ortus heliacus ſiue emerſio. Non abſimilis eſt modus inueſtigandi crepuſculorum initia & fines. ea autem ſequitur

eſto, ſed occultationis ſtellæ fixæ primæ magnitudinis, emerſio inuerſione huius operationis inuenitur.

Syrius lucida ſtella eſt præfulgens in ore Canis maioris, huius occaſus heliacus ſiue occultatio ſit exquirenda, ad latitudinem Borealẽ 51.gr. Syrius autẽ (cum ſit ſtella primæ magnitudinis) occultatur, cum horizontẽ tangit in ſupero hæmiſphærio, ſole minus 12.gr. infra horizontem depreſſo. Si igitur ſtellam hãc horizonti adijcias ab occidente, (Globo prius iuxta

latit.

quamur ſententiam vulgo receptam. Si igitur ex hoc fundamento horam cognoſcere cupis qua crepuſculum inchoatur aut finitur, ad datum tempus & locum : Globum ſtatuas iuxta loci latitudinem, & Solis locum dato tempori congruentem Meridiano adiunge, & indicem horarium 12. horæ ſui cycli, ſignato deinde gradu eclipticæ qui è diametro Solis loco opponitur : vertatur Globus donec idē gradus oppoſitus Soli 18 grad. ab horizonte attollatur à parte occidentali (& index in cyclo horario monſtrabit initium crepuſculi matutini : ſi à parte orientali, veſpertini crepuſculi finem indicabit.

Quomodo ad datum aliquod tempus & locum inueniatur quãtitas diei artificialis aut noctis: vel quantitas paralleli Solaris quæ ſupra horizontem manet quæq; infra latet. idem etiam de ſtella aliqua inuenire. Cap. 12.

DIem ſupra diximus eſſe duplicem, Naturalem qui definitur integra reuolutione æquatoris, cum ea etiam portione æquatoris quæ reſpondet arcui eclipticæ quem Sol motu proprio in vno die conficit. integram æquatoris reuolutionem (miſſa ea portione quæ proprio Solis motui reſpondet) diuidunt in 24. partes æquas, quas horas vocant æquales, quia ſemper inter ſe æquãtur, quindecim æquatoris gradibus orientibus & occidentibus in ſingulis horis. Huius diei diuerſa initia (alij enim ab occaſu Solis incoarunt

incoarunt vt Attici & Iudæi : alij à media nocte, vt Ægyptij & Romani ; ſunt etiam qui ab ortu Solis, vt Chaldæi ; vel a Meridie vt Vmbri, & vulgò ſolent Aſtronomi, initium ſumpſerunt) noſtri inſtituti non eſt pertractare. Diem artificialem definiunt ſpatio eo quo Sol in ſupero hemiſphærio verſatur, cui opponunt noctem dum inferũ percurrit. Diem artificialem itemq; noctem in 12. vtranq; partes diuidunt, quas horas vocant inæquales, quoniam diuerſis anni tempeſtatibus maiores ſunt aut minores, neq; idem ſemper ſpatium obtinent. Artificialis diei quantitas ſic exquiritur. Globo ad latitudinem loci compoſito, inueniatur gradus eclipticæ quem Sol dato tempore occupat, eundem meridiano adiungas & indicem horarium 12. horæ: conuerſo deinde Globo dum Solis locus horizontem ab oriente attingat, index in cyclo horario monſtrabit horam Solaris ortus : ſi occidenti applicetur, hora occaſus ſimiliter patebit, vnde tota diei quantitas inuenietur. Horarum numerum ſi multiplices per 15 (tot enim, vt ſæpe diximus æquatoris gradus vni horæ æquali congruunt) prodibit numerus graduũ ſolaris paralleli ſupra horizontem apparentis, quos ſi demas à 360. grad. relinquitur quantitas paralleli latentis. vel conuerſo licebit primo quantitatem arcus diurni, deinde horarum numerum per diuiſionem colligere. Globo enim poſito ad latitudinem loci, & notato gradu eclipticæ quem Sol obtinet, exquiras per præmiſſa differentiam aſcenſionis rectæ & obliquæ eiuſdem gradus eclipticæ ad latitudinem eius loci. hæc enim differentia erit ſemiſſis qua dies

artificialis

artificialis eo loco & tempore excedit aut deficit à die æquinoctiali, addéda est itaq; dum dies sunt maiores noctibus (quod fit ab 11. Martij ad 12. Septembris) subtrahenda autem reliqua anni parte cum dies sunt minores noctibus. Exempli causa. 12. die Iunij iuxta stilum veterem Sol obtinet principium Cancri, cuius ascensio recta est gr. 90. at in latitudine gr. 52. Si principium Cancri horizonti applicetur, inueniemus ascensionem obliquã gr. 56. 10. m. prox. differentia est gr. 33. 50. quam si adijcias 90. gr. semissi diei æquinoctialis, oritur semissis diei artificialis grad. 123. 50., & totus arcus diurnus 247. grad. 40. m. quos si diuidas per 15. quotus erit 16 ½. fere numerus horarum diei artificialis 12. Iunij latitud. 52. Hinc inuestigatur quantitas diei maximi, minimi & alicuius intermedij, eiusq; ad datũ tempus & locum incrementum & decrementum. Cleomedes augeri & minui dierum quantitates hac ratione voluit vt primo mense ante & post factum æquinoctiũ augeantur & minuantur ¼. parte totius differentiæ inter diem maximũ & minimum, secundo mense ⅙. parte: tertio vero 1/12. parte, vtpote si tota differẽtia inter diẽ maximũ & minimũ, sit horarũ 6. augentur aut minuũtur dies mẽse proxime præcedẽte aut subsequente æquinoctiũ hora 1 ½, hoc est parte quarta horarũ 6. secundo mense integra hora, tertio mense semisse vnius horæ. Atqui hæc quidem vt sint vera ad aliquam datam & definitatam latitudiné, in vniuersum se ita non habent. nam ad diuersas inclinationes sphæræ diuersa ratione augmentum capiunt & decrementum. Cum enim paralleli in omni latitudine

Exemplum.

Cleomc. 1.

titudine ſecentur ab æquatore diſſimili ratione, diſſimilis erit incrementi & decrementi ratio. Fruſtra dixerim de inueniendo arcu apparente paralleli alicuius ſtellæ. Eadem plane ratione deprehenditur qua parallelus Solis diurnus.

De inuenienda hora diei & noctis tam æquali quam inæquali, ad datum quoduis tempus & latitudinem loci. Cap. 13.

HOram diei æqualem ſi lubeat cognoſcere, Globus ſtatuatur ad datam loci latitudinem, Solis altitudo obſeruetur, deinde locum Solis in ecliptica Meridiano adiunge, & indicem cycli horarij horæ 12. Poſtremo Globum voluas, vel ad ortum vel occaſum, prout facta obſeruatio poſtulat, vſq; dum Solis locus tot gradibus ab horizonte emineat, quot cõgruunt obſeruationi factæ, (vt in inueniendo Solis Azimuth dictum eſt) Globo enim ſic conſtituto index in circulo horario monſtrabit horam diei quâ facta eſt obſeruatio. Eodem modo horam noctis deprehendas, obſeruata altitudine alicuius ſtellæ cognitæ & in Globo expreſſæ. index enim maneat vt prius ad locum Solis accommodatus, & Globus circumagatur, donec ſtella obtineat altitudinem ab horizonte æqualem altitudini obſeruatæ, & index horam noctis indicabit. Ad inueniendam horam diei inæqualem hæc eſt ratio. Primo inuenienda eſt, per præmiſſa, quantitas vel numerus horarum diei artificialis, itemq; eiuſdem diei hora æqualis exqui-

renda est : vnde per proportionis regulam inuestiganda est hora inæqualis.

Exemplum. In latitudine graduum 49. maximus dies est horarũ 16. Cum fuerit eius diei hora decima antemeridiana vel sexta ab ortu Solis, cupio cognoscere quota sit ea hora inæqualis. Dispositio terminorum proportionalium sic habet. 16. dant. 6, ergo 12. (totenim horas inæquales singulis diebus itemq; noctibus attribuunt) dant $4\frac{1}{2}$. Quot etiam gradus æquinoctiales vni horæ inæquali congruant, hinc licebit exquirere, si totum numerũ graduum arcus diurni diuidas per 12. Vtpote, si dies artificialis sit 16. horarum æqualium, arcus paralleli diurni erit graduum 240. quos si per 12. diuiseris, quotus 20. indicabit numerũ graduum æquinoctialium qui conueniunt vni horæ inæquali. simili methodo noctis hora inæqualis eiusq; quantitas inuestiganda est.

De inuenienda longitudine, latitudine, & declinatione stellarum fixarum, vt in Globo exprimuntur. Cap. 14.

Longitudo stellę quid. LOngitudo stellæ est arcus ecliptícæ interceptus duobus circulis maioribus ductis per polos ecliptícæ, quorum alter transit per intersectionem æquatoris & ecliptícæ, alter per centrum stellæ.

Latitudo quid. Latitudo est distantia stellæ ab ecliptica numerata in eo circulo qui per eius centrũ transit. Hæc si cupis cognoscere accipiendus est quadrans altitudinis vel alius quadrans in 90. grad commodè diuisus : cuius alter terminus applicandus est

eſt polo Zodiaci boreo ver auſtrino prout poſtulat ſtellæ latitudo, tranſeat deinde per medium ſtellæ ad vſq; eclipticam vbi alter quadrantis terminus notabit gradum longitudinis eiuſdem ſtellæ quæ à principio Arietis numeranda eſt. ea autem portio quadrantis quæ intercipitur inter ipſam ſtellam & eclipticam indicabit eiuſdem ſtellæ latitudinẽ. Declinatio eſt diſtantia à meridiano, numeranda in circulo maiore tranſeunte per æquatoris polos. itaq; ſi aliquã ſtellam Meridiano applices, facile innoteſcet eius declinatio numeratis gradibus & minutis meridiani (ſi quæ ſunt) quæ comprehenduntur inter medium ſtellæ & æquatorem. *Declinatio quid.*

De inuenienda deflexione acus magnetitæ à veri meridiani ſitu quam vulgo vocant noſtrates compaſſi variationem, ad datam quãuis latitudinem. Cap. 15.

FErrum tactum magnete ab interſectione veri Meridiani & horizontis varijs locis variè deuiare tam eſt teſtatum & comprobatum quã quod maxime. neq; eſt hæc aſſertio ſolũ nautarum cõmentum ad ſuos errores tegendos (vt voluit. P. de Medina Nauclerus regis Hiſpaniarum,) Neq; accidit hoc quod magnetis vis longo vſu & exercitatione debilitata defecerit (vt perſuaſum habuit P. Nonius) aut quòd ab origine non ſit recte indita (vt alij frigide coniectantur) ſuâ ipſâ naturâ ita ſertur. Huius deflectionis cauſam, hactenus fruſtrà quæſitam, nemo aſſecutus eſt, in hoc vt & in alijs

abditis & abstrusis naturæ miraculis excutimus prorsus. Normam aliquam siue canonem huius deflectionis quasi regularis esset & ordinata tradere conati sunt, & hoc frustra. inordinatam enim testatur experientia, non ea solum quæ ex crassiore nautarum coniectura desumpta est, longiuscule sæpe à vero aberrante, accuratioribus multo obseruatis cõpertum est. Apud Insulas quas vocant Acores à Meridiani situ omnio non deflectere tradunt vulgo; apud eas quæ sunt occidentaliores vix aut non multum deflectere ausim affirmare. Si ad orientem ab ijs insulis nauigaris, cuspis ea quæ Boream respicit paululum ad ortum vergit, Antuerpiæ in Brabantia 9. circiter grad. prope Londinum in Anglia 11. amplius grad. aberrat à vero Meridiano. Si ad occidentem ab ijs insulis processeris, deflectet eadem Cuspis ad occidentem. in ora Americæ maritima latitud. 35. circiter aut 36. grad. amplius 11. grad. à vero Meridiano deuiat. Vltra æquatorem diuersa longe est ratio. prope extimum Brasiliæ promontorium in ortum excurrens, (C. Frio vocant vulgo) 12. amplius grad. à Meridiano deflectit, intra fauces orientaliores Freti Megallanici 5. vel 6. grad. Si ab eo quod diximus promontorio ad ortum Aphricam versus nauigaris, augetur ea deflectio ad 17, aut 18. vsq; gradus, quod (vt coniectura assequi potuimus) contingit in Meridiano non multum distante ab eo qui transit per Acores: inde minuitur deflectio ad 9. aut 10. gradus quod accidit prope insul. S. Hælenæ, paulum ad occidentem. Inde ferunt minui vsq; dũ C. bonæ spei præteruectus sis, vbi volunt in ipso meri-

meridiani ſitu iacere, prope flumen illud quod ab ea cauſa vocarunt Luſitani R. de las Agulias, atq; hæc tota deuiatio eſt ad ortũ. Hæc ex obſeruatis (quantum patitur inſtrumentorum perfectio, quorũ vſus in nauigando conceditur) ſatis accuratis, per ſphæricorum triangulorum doctrinam calculatis comperta habemus & explorata. Vnde multa quæ de hac deflectione vulgo ferũtur, partim falſa partim ſuſpecta habemus. Quòd in eo Meridiano qui Acores Inſulas pertranſit ferrum hoc verũ Meridianum vbiuis reſpicit exactè : quòd in ora Braſiliæ maritima cuſpis borealis in occaſum declinat (vt quidam ferunt) falſum deprehendimus. quòd ad terram Baculaos (vocant noſtrates Newfoundland) integris gradibus 22. amplius ad occaſum flectere prodiderunt ſuſpectum habemus, quod cum ea obſeruatione, quam in ora Americæ factam diximus, deflectionis grad. circiter 11. parũ videtur congruere, cui tantum fidimus vt præterea nulli. Faceſſant igitur qui vnicum huius aſpectus punctum quærunt, vel in terra, (vt magneticos montes non multum remotos ab Arctico polo) vel in cœlo (vtpote caudã minoris vrſæ) vt Cardano videtur, vel quod in Meridiano Acorenſium iacet, 16½. gradibus vltra polum boreum (vt Mercator voluit.) faceſſant etiã qui ex hac deflectione calculum inueſtigandi locorum longitudines inſtitui poſſe arbitrantur : quod vtinã præſtare poſſent, & reuera fieret, ſi vnicũ punctum ſemper reſpiceret. Sed hijs miſſis videamus quomodo huius deflectionis quantitas mediante vſu Globi quouis loco cognitæ latitudinis inueniatur. Primo

parandum

parandum est instrumentum aliquod quo distantiam Solaris Azimuth à situ magneticæ acus obseruare liceat. vtuntur vulgo nostri compasso vel indice nautico in 360. gradus diuiso filo transuersim centro indicis, in pixide imminente, quod obiectum soli vmbram proijciat in centrum indicis, hoc instrumentum nostri Nautæ vocant compassum variationis. neq; incommodum videtur hoc instrumentum ad hunc vsum, sed velim vt aliquanto maiore cura & accuratione quam vulgo solet conficeretur. Hoc instrumento, vel alio quouis huius generis, obseruetur distantia Solaris Azimuth ad quoduis tempus & locum à proiectione acus magneticæ: quantũ autem idẽ Solis verticalis eodẽ tempore à vero Meridiano distet supra docuimus exquirere, differentia quæ est inter distantiam solis à vero Meridiano, & à situ ferri magnetici est compassi variatio. Præterea, docuimus superius quomodo veri ortus & occasus amplitudo inueniatur: si igitur huiusmodi instrumento, quod diximus, obseruetur quot gradibus Sol oriatur aut occidat ab eo indicis seu compassi termino quod ortum aut occasum videtur indicare, patebit similiter deuiatio acus magneticæ, à vero Meridiano, si qua sit.

Quomodo per Globum construatur horologium sciotericum ad datam quamlibet loci latitudinem. Cap. 16.

INtegrum artificium construendi horologia non pollicemur, prolixinis est quã quod hoc loco præ-

stari

ſtari poſſit, & quam noſtri inſtituti ratio patitur. ſat erit paucula quædam delibaſſe & nonnulla huius artis fundamenta quaſi digito monſtraſſe, quoniã per Globorum vſum commodiſſime concipi poſſunt. Duo horologiorum genera hoc loco menſtrabimus quæ maxime vulgaria: alterum vocant horizontale, quod deſcribitur in plano horizonti parallelo: alterum vocant murale quod deſcribitur in plano erecto ad horizontem ita vt Boream aut Auſtrum reſpiciat. Sed vtrunq; non incõmode dixeris horizontale, non quidé reſpectu eiuſdé loci ſed diuerſorum. itaq; ſi planum horizontale ſit, ſi erectum, ſi quouis modo inclinatum, vnicũ erit horologium in eo diſcribendi artificium. Videamus igitur quomodo in plano horizontali alicuius loci horologium delineetur. Præpatato igitur plano horizonti parallelo, ducatur in eo linea Meridiana Septentrionem & Auſtrũ quam fieri poteſt accurate reſpiciens; hanc tranſuerſim ſecet ad angulos rectos alia linea ortum & occaſum indicans. illa horæ 12. erit index hæc 6. antemeridianam & pomeridianã. centro facto in harum linearũ concurſu deſcribatur periferia in eodem plano ad quamlibet diſtantiam, quã ſecabimus in 360. partes. quæ vulgata eſt diuiſio omnium circulorũ. has etiã, ſi fieri poſſit, in minutiores æquales partes diſtribuere non eſt incõcinnũ. reſtat vt in hac periferia exquiramus diſtantias linearum horariarũ ad datam loci latitudiné. hoc vt præſtemus vſu Globi, conſtituatur Globus ad loci latitudinem: maioré deinde aliquem circulũ in Globo delineatum, eorum (inquam) qui per polos

mundi transeuut, (vtpote Colurũ si placeat æquinoctiorum) Meridiano applica, in quo situ horã indicat 12. siue medium diẽ. volutato deinde Globo versus occasum, si libet, vsq; dum 15. æquatoris gradus pertranseant Meridianum, signetur gradus horizontis quẽ idem Colurus in horizonte intersecat, is enim in horizonte indicabit distantiã horæ primæ & 11. à Meridiano: quarum vtraq; vna hora distat à meridie. volutato rursus Globo dum alij 15. grad. percurrant Meridianum, idẽ Colurus indicabit distantiam horæ 10. quæ duabus horis Meridiẽ anteuertit, & secũdæ quæ duabus itẽ horis Meridiẽ subsequitur. Eodem modo reliquarũ horarũ distãtiæ in horizonte signabuntur 15. æquatoris gradibus in singulis horis Meridianum percurrentibus. sed cauendum hoc est vt numerentur hæ distantiæ ab ea horizontis parte qua polus attollitur, vtpote à Borea horizontis parte, si polus Boreus eleuetur ab Austrina si Austrinus emineat. Has deinde horarias distantias in horizonte Globi notatas transferas in planum fabricando horologio destinatum, numeratis in eius circumferentia gradibus numero æqualibus ijs quos Colurus in horizonte Globi signauit. Erigẽdus postremo est in plano stilus siue Gnomon, vbi hoc obseruandum (quod est præcipuum ac prope vnicum in hac arte præceptum) vt ea Gnomonis acies aut linea quæ horas sua vmbra indicat, in omni horologiorum genere sit parallela axi mundi, ita vt cum suo plano æqualem faciat suæ inclinationis angulum atq; axis mundi cum horizonte. oportere Gnomonem, Austrum, & Boream respicere siue

in

in Meridiani ſitu iacere, adeo notum eſt vt fruſtra monuerim. Hæc eſt ratio conſtruendi horologium in plano aliquo horizonti parallelo. Si erigatur planum horizonti ad perpendiculum Boream aut Auſtrum reſpiciens (vocant vulgo murale) hoc vnum conſideretur (cuius ignoratio eos qui vulgo tradunt artificium deſcribẽdi horologia, in multos labores & difficultates coniecit) vnum inquam hoc aduertatur, planum illud quod vno loco erigitur in alio loco eſſe horizontale, in eo inquam loco cuius vertex 90. gradibus ab eo loco diſtat ad Auſtrum aut Boream. Exempli cauſa, conſtruendum ſit horologium in plano aliquo erecto ad latitudinem 52. grad. hoc nihil eſt aliud quam deſcribere horologium in horizonte latitud. 38. Si planum ſit erectum ad latitud. 27. erit horizontale ad lat. 63. eadem de cæteris omnibus ratio. Hinc manifeſtum eſt horologium horizontale & verticale idem eſſe ad latitud. 45. gr. Hoc artificio licebit deſcribere horologium in plano quouis modo ad horizontem inclinato, modo inclinationis quantitas cognita ſit. vtpote in plano inclinato ad horizontem in latitud. 52. Bor. cuius inclinatio eſt graduum 10. ab horizonte ad Auſtrum ſi inſcribendum ſit horologium: deſcribendum eſt in eo plano horologium horizontale ad latit. 62. gr. Bor. ſi planum in eadem latitudine attollatur 16. gr. ab horizonte ad Boreã, erit illud horizontale ad lat. gr. 36. Bor. Hæc de fabricandis horologiis monuiſſe ſat eſto.

Pars vltima.

De Rumbis in terrestri Globo delineatis, & eorum vsu.

Ineas eas quas nauis sequuta acum magneticam sui itineris ducem, in æquoris superficie describit, Petr. Nonius latinè vocat Rumbos; mutuatus hoc nomen à suis Lusitanis. quoniam autem vsus obtinuit vt inter eruditiores etiam vsurpetur hæc vox, licebit nobis etiam vti. Rumbi in Globis exprimuntur circulis vel maioribus, vel minoribus, vel lineis quibusdam tortuosis & incuruatis. In chartis suis marinis nautæ rectis lineis exprimere solent; sed hoc est à veritate alienum, nec vllo modo ab erroribus defendi poterit. Inuentio hæc & consideratio delineandi Rumbos in Globo, aliquanto est antiquior, Petrus Nonius Lusitanus multa de his in duobus lib. quos de nauigandi ratione conscripsit. Mercator etiã in suis Globis eas expressit, sed vsus eorum vsq; dum non adeo vulgo notus. In horum itaq; explicatione par esse duximus vt prolixius paulo insisteremus, & eorum naturam atq; originem altius repetentes, ad eorum vsum in ratione nauigandi deueniemus. Ordiemur autem ab explicando ortu atq; natura indicis Nautici, qué compassum vocant nostates Nautæ. Esse autem planum rotundum cuius circumferentia in 32. partes æquales

æquales ſecatur, rectis lineis per centrum tranſeuntibus, tam eſt notum quam quod maximè, vnicum eius punctum cui ſupponitur acus magneti affricta Boream reſpicit, cuius oppoſitum neceſſario Auſtrum reſpiciet; & reliqua eius puncta certas & fixas in horizonte ſedes (oportet enim vt Compaſſus ſit horizonti parallelus) reſpicient. fixas voco docendi gratia, non oblitus ferrum magneti affrictum præterquam quod ſua natura varie aberrat varijs in locis à meridiani ſitu (quam vocant variationem Cõpaſſi vulgo:) pro diuerſarum gentium more varie etiam in Compaſſo poſitũ eſſe. Sunt enim qui gradibus 5.m.37. amplius ſeponunt ad orientem eius puncti quod Borealem mundi plagam indicat, vt Noſtrates & Hiſpani. ſunt qui gr.3. m 18.fere. ſunt qui integris grad. 11 $\frac{1}{4}$. ab eodem puncto ſeparant, His tamen non obſtantibus ſupponamus ferrum perpetuo reſpicere Boream & Auſtrum. ſunt autem hæ lineæ in Compaſſo Nautico expreſſæ, communes ſectiones horizontis & circulorum verticaliũ, (vel potius his parallelæ.) ea cui acus ſubijcitur communis eſt ſectio meridiani & horizontis. hanc quæ recte ſecat, communis eſt ſectio horizontis & verticalis circuli ducti per ortum & occaſum æquinoctialem. ſic habemus quatuor præcipuos mundi Cardines & totus horizon in quatuor æquas partes diuiditur, quarum quælibet 90. grad. complectitur. Si quamq; ex his partem rurſus diſpeſcas in 8. partes, per 7. verticales circulos ab vtraq; parte meridiani ductos per verticem, totus horizon in 32. æquas partes ſecabitur, quarũ quælibet grad. 11 $\frac{1}{4}$. complecte-

tur. tot autem mundi plagas nautæ in suis profectionibus quam fieri potest diligenter solent considerare; minutiores partes & diuisiones non sectantur. Hæc est Indicis nautici origo, quem ducem suarum profectionum sequuntur Nautæ, videamus proxime quales lineas nauis secuta Compassum ducem in suo cursu describat. Ad faciliorem autem huius rei intelligentiam hæc præmittenda ducimus, quæ si recte perpendantur, facile & perspicuum reddent totum hoc negotium.

Corol. 1 Omnes omnium locorum meridiani per vtrunq; polum transeunt. *Ideoq;* secant æquatorem & omnes eius parallelos ad rectos angulos.

2 Si dirigatur nostrum iter alio quã versus alterum polorum, nouus subinde introducitur meridianus, nouusq; horizon.

3 Ferrum si magneti affricetur, communẽ meridiani & horizontis sectionem indicat, & alter eius terminus Boream, alter Austrum perpetuo respicit quodammodo. Non possum hoc loco tacere grauem lapsum Gemmæ Frisij qui in Corollario ad 15. Cap. Cosmogr. P. Appiani affirmat ferrum magneti affrictum spectare polum Boreum citra æquatoris lineam, Austrinum vltra æquatorem, cuius opinioni refragatur experientia tum nostra tum aliorum. Fefellit opinor eum nimia credulitas, adhibuit fidem vanæ alicui relationi temere cõtra veritatem effictæ, vtvt res se habet, grauis error & tanto viro indignus. Futilem hanc relationem merito iam antea damnauit illustris. Iul. Scaliger, ex fide nauigationum Ludouici Vertomãni & Fernandi Megallanes.

Exer. 131. c. Car.

4 Idem

4 Idem Rumbus ſecat omnes omnium locorum meridianos ad æquales angulos, & ſimiles mundi plagas in omni horizonte reſpicit.

5 Circulus maior per verticem (ab æquatore remotum) ductus non poteſt ſecare diuerſos meridianos ad æquales angulos. Itaq; non aſſentior P. Nonio, qui voluit Rumbos confici ex portionibus maximorum circulorum, cum enim portio maioris circuli intercepta diuerſis meridianis vel minime ab inuicem diſiunctis, inæquales cum ijs faciat angulos, non poteſt ex ijs Rumbus conflari per propoſitionem præcedentem proximè. At inæqualitas hæc angulorum (inquit) non percipitur ſenſu niſi in meridianis longiuſcule remotis. Eſto. at arte & apodixi huius poſitionis error percipitur. non decuit ſummum mathematicum præceptiones artis ſenſu metiri.

6 Circulus maior per verticem alicuius loci ductus & ad meridianum inclinans, maiores facit angulos cum alijs omnibus meridianis quãcum eo à quo primo ducitur. oportet itaq; vt ea linea quæ cum diuerſis meridianis æquales facit angulos (vt ſunt Rumbi) incuruetur ad meridianum. Hinc fit vt naui procedente ſecundum vnum & eundem Rumbum (præter quatuor primarios & cardinales) linea deſcribatur ad helicum formam incuruata, quales in Globo terreſtri delineatos videas.

7 Portiones eiuſdem Rumbi inter duos quoſuis parallelos, quorum differentia latitudinis eſt æqualis, intercepti, & ipſæ ſunt æquales. Itaq; æquale eiuſdem Rumbi ſegmentum, æqualiter vbiuis loco-

rum

rum latitudinis differentiam immutat, verum igitur est vulgare nautarum præceptum, æquali ſpatio alicuius itineris in eodem Rumbo, alterum polorum æqualiter attolli aut deprimi. & fallitur Mich. Coignet qui ex male aſſumptis fundamentis contrarium ſibi habuit perſuaſum. C.17.

Ex quarta propoſitione hoc oritur conſectarium, Rũbos productos nõ tranſire per polos. Cum enim idẽ Rũbus æqualiter ad omnes meridianos inclinetur, Meridiani autem omnes per polos tranſeunt: ſequeretur, (ſi Rumbus polos ingrederetur) vt eadẽ linea in eodem puncto infinitas alias lineas ad æquales angulos ſecaret, quod eſt impoſſibile, quoniã anguli alicuius pars toti non poteſt æquari. Neque facit contra hoc conſectatium quod in poſtrema propoſitione diximus inter quoſuis parallelos æqualium diſtantiarum æquales eiuſdem Rumbi portiones intercipi, vt inde ſequeretur ſegmentum alicuius Rumbi inter parallelum latitudinis grad. 80. & polum, æquale eſſe ſegmento eiuſdem Rumbi inter æquatorem & parallelum latitud. grad, 10. intercepto, quoniam polus non eſt parallelus. Vere hoc à Nonio poſitum eſt, Rumbos polum non intrare, at non æquè feliciter probatum, nititur enim fundamentis cõtra veritatem aſſumptis, vt prius diximus. Perperam Gemma Friſ. in append. ad 15. c. Coſm. Appiani dixit Rumbos in polis concurrere vt & alij quos merito taxat Mich. Coignet. L.2.c.24. C.17.

His animaduerſis facile erit intelligere quas lineas nauis ſecuta magnetem ſui iteneris ducem in mari deſcribat. Si prora nauis dirigatur in Auſtrum

aut

aut Boream quas plagas ferrum magnete tactũ reſpicit, ſub eodé ſemper Meridiano fit profectio, quia vt 3. prop. diximus, ferrũ hoc horizontis & Meridiani interſectiones reſpicit & in eiuſdem Meridiani plano ſitum eſt. Si prora dirigatur in eam partem quam indicat Rumbus orientis & occidentis, delineabitur vel æquator, vel circulus ei parallelus. Si enim vertex in principio inſtituti itineris ſub æquatore ſit, nauis delineabit æquatoris ſegmentũ. ſi vertex ab æquatore remotus ſit vel in Auſtrum vel Boream, deſcribet noſter curſus parallelum tantæ ab æquatore diſtantiæ quanta eſt latitudo loci vnde ſumus profecti. Vtpote, concipiamus inſtitutũ eſſe curſum ab aliquo loco æquatori ſubiecto ſecundum Rumbũ orientis & occidentis, progrediemur ſemper in ipſo æquatore; hac enim conditione iter conficimus, vt cum nouo Meridiano qui ſubinde in progreſſu exoritur, linea noſtri curſus rectos faciat angulos. Nulla autem linea præter æquatorem hoc præſtare poteſt, vt ex primæ prop. Corollar. manifeſtum eſt. igitur huiuſmodi curſu æquatoris portio deſcribetur. Si ab aliquo loco extra æquatorem inſtituamus curſum ſecundũ eundũ Orientis & Occidentis Rumbum, ſub eodem ſemper parallelo verſabimur. omnes enim paralleli æquatoris ſecant omnes Meridianos ad angulos rectos per primæ prop. Corol. Licet autem prora ſemper ſpectet ortũ vel occaſum Solis æquinoctialem, ſiue interſectioné æquatoris & horizontis; æquatori tamen in progrediendo non appropinquamus, ſed æqualiter ſemper ab eo diſiungimur. neq; enim eo peruenimus

quo

quo ſpectat prora, ſed delineamus curſum qui nouũ Meridianũ, qui ſemper nobis progredientibus ſuboritur, ſecat ad angulos rectos, qui neceſſario erit parallelus. Si conficiendum ſit iter ſub aliquo Rumbo ad Meridianũ inclinato, non fiet curſus in circulo aliquo vel maiore vel minore, ſed in linea incuruata ad formã helicum. ſi enim duxeris maiorem circulũ per verticem alicuius loci inclinatum ad Meridianum, idem circulus ſecabit proximũ Meridianum ſub maiori angulo quã priorem ſecauerit, per 6. prop. præcedentem, ideo non conſtituet aliquẽ Rumbũ, quia idem Rumbus ſecat omnes Meridianos ſub eodem ſemper angulo per. 4 prop. Paralleli autẽ omnes ſecant Meridianos rectè per Corol. 1. prop. non igitur ad Meridianũ inclinãt. De lineis quæ in profectionibus fiunt marinis, quæ ducẽ habent indicẽ nauticũ dirigẽte acu magnetica, Gemma Friſius in Append. ad 15. c. par. 1. Coſm. P. Appian, ſic habet. Verũ hoc obiter annotandum duxi, haud parum differre itinera pedeſtria ab ijs quæ nauigijs fiunt. Nam illa per circulos Sphæræ magnos fieri intelliguntur vt recte Wernerus demonſtrauit Cõmentarijs in Ptolom. editis. Marinæ vero profectiones maxima ex parte curua ſunt, quoniã raro per circulos magnos fiunt, ſed aliquando per æquatoris parallelos, dum nauis in ortum aut occaſum tendit, aliquando vero per maximos in Sphæra circulos, vt quando ab Auſtro in Septentrionem aut è contra nauigatur, item ſub æquatore tantum in ortum occaſumue nauigantibus. Alijs autem omnibus, directis licet ſecundum magnetis ductũ, nauigationibus, curua fiunt itinera

quæ

quæ maximis circulis non ſunt ſimiles, neque parallelis, ſed neq; circuli ſunt, ſed lineæ curuæ tantũ, omnes tandẽ in polorum alterum concurrentes. Recte hæc omnia niſi quòd lineas has in polo facit concurrentes, quod alienum eſſe à natura Rumborum ſupra monuimus. Hactenus de origine & natura Rumborum ſiue linearum quas nauis in Mari deſcribit ſecuta acum magneticam viæ ducem. Videamus quem habeant vſum in terreſtri Globo delineati.

De vſu Rumborum in Globo terreſtri.

In nauigandi arte quæ docet qua via & ratione dirigenda ſit nauis vt ab vno loco ad alterum proficiſcamur, quatuor præcipuè conſiderantur, locorum longitudines & latitudines, vel earundem differentiæ, Rumbus, & interuallum ſiue diſtantia inter duo loca ſecundum iter marinum dimenſa. Interuallum enim alio modo Geographi alio Nautæ accipiunt. Illi maioribus circulis locorum diſtantias metiuntur, vt poſt Wernerum Peucerus demonſtruit in libello de dimenſione terræ: Nautæ circulis interdum maioribus interdum minoribus vt plurimum lineis incuruatis, cum itinera conficiant, diſtantias etiam metiantur par eſt. Quæ & quot ex his dãda ſint vt inueniũtur reliqua opertet vt cõſideremus. Loca autẽ inter quæ iter noſtrũ cõficimus differunt vel ſola longit. vel ſola latitud. vel vtriſq;. ſi ſola differant latitudine ſub eodẽ conſtituta ſunt Meridiano, ideo Rumbus qui ducit ab vno ad alterũ

erit ſeptentrionis aut Auſtri, reliqua ſunt differentia latitudinis & interuallum, quorum vno dato alterū facile inuenietur. Si data ſit differentia latitudinis in gradibus & minutis, quomodo ſolét Nautæ, multiplicatus ille numerus grad. & minutorum per 60. (quot milliaria noſtratia vni grad. vulgo tribuunt ſecundum Ptolomæi mentem vt ſupra demonſtrauimus) prodit numerus milliariorū confecti curſus. Si per 17 ½. eundem numerū graduum multiplicaueris prodit itineris interuallū in Leucis Hiſpanicis. Contra ſi detur interuallum in milliaribus aut Leucis, ſi diuidas eorum numerū per 60. vel 17 ½. quotus indicabit numerū graduū & minutorū qui congruit differentiæ latitudinis inter duo data loca. Vtpote ſi ab extremo Angliæ promontorio occiduo (quod vocant the Lizard) verſus Auſtrū nauigetur vſque dum peruentū ſit ad promont. Hiſp. quod C. Ortegal vocant quorū differētia latitudinis eſt gr. 6. 10. m. ſi diſtātiā cupis cognoſcere inter hæc loca multip. 6. g. 10. m. per 60. prodit 370. numerus milliariorū noſtratium inter duo data loca. Multo autem rectius per milliaria noſtratia inſtituetur calculus quia 60. ex his reſpondent vni grad. vt vni minuto vnum etiā milliare congruat, vnde prolixus & operoſus per fractiones labor plurimum vitabitur.

Sequuntur loca quæ differunt ſola longitudine, quæ ſi æquatori ſint ſubiecta cognito interuallo differentia longitudinis inuenietur vel conuerſo, per multiplicationem aut diuiſionem eo modo quo inuenta eſt ſupra latitudinis differentia. quod ſi poſita ſint extra æquatorem alia ratio eſt ineunda. cum

enim paralleli omnes minores ſint æquatore, qui propiores ſunt paulò, qui remotiores ſunt magis, qui prope polum maximè: hinc fit vt certa aliqua & determinata menſura omnibus parallelis non poſſit attribui. Vulgus Nautarum grauius aberrant dum tribuunt vni gradui cuiuſq; paralleli æqualem menſuram cum vno gradu æquatoris, vnde multi errores in nauigando orti ſunt, & multæ terræ partes proprijs ſedibus expulſæ in alienas introductæ ſunt. hac etiam ex parte vt conſulerem ijs qui in mathematicis minus ſunt exercitati Tabulam ſubieci quæ monſtrat quam habeat rationem vnus gradus cuiuſlibet paralleli ad gradum vnum æquatoris, vnde cuiuſque paralleli propria menſura inueniri poſſit. in hac autem Tabula prima ſemper Columella proponit parallelos æquatoris ſingulos per vnum latitudinis gradum abinuicem diſtantes, ſecunda oſtendet minuta & ſecunda æquinoctialia quæ vni gradui cuiuſq; paralleli congruunt; quæ ſi conuertas in milliaria cognitum erit quot milliaria conueniant vni gradui cuiuſque paralleli. Sic autem habet.

O. m.

	m.	sec.		m.	sec.		m.	sec.		m.	sec.
1	59	59	24	54	48	47	40	55	70	20	31
2	59	57	25	54	22	48	40	9	71	19	31
3	59	55	26	53	55	49	39	22	72	18	31
4	59	51	27	53	27	50	38	34	73	17	31
5	59	46	28	52	58	51	37	46	74	16	31
6	59	40	29	52	28	52	36	56	75	15	30
7	59	33	30	51	57	53	36	6	76	14	28
8	59	25	31	51	25	54	35	16	77	13	26
9	59	15	32	50	52	55	34	24	78	12	24
10	59	5	33	50	18	56	33	32	79	11	22
11	58	53	34	49	44	57	32	40	80	10	20
12	58	41	35	49	8	58	31	47	81	9	18
13	58	27	36	48	32	59	30	53	82	8	16
14	58	13	37	47	55	60	29	59	83	7	14
15	57	57	38	47	17	61	29	5	84	6	12
16	57	40	39	46	38	62	28	10	85	5	10
17	57	22	40	45	58	63	27	14	86	4	8
18	57	3	41	45	17	64	26	18	87	3	6
19	56	43	42	44	35	65	25	22	88	2	4
20	56	22	43	43	52	66	24	24	89	1	2
21	56	0	44	43	8	67	23	26	90	0	0
22	55	37	45	42	24	68	22	28			
23	55	13	46	41	40	69	21	30			

Mediante hac Tabula si facta sit nauigatio sub aliquo parallelo, & cognoscatur spatium confecti cursus, longitudinis differentia inuenietur, per proportionum regulam, vel conuerso, si data sit differentia longitudinis interuallum inuenietur, Exém-

pli

pli cauſa. Ab occiduo Africæ promontorio quod vocant vulgo C. Dalguer nauigatum ſit verſus occidentem per 200. Leucas Anglicas, hoc eſt 600. milliaria noſtratia, quærimus longitudinis differentiam. Promontorium illud eſt latitudinis grad 30. Bor. vni autem grad. in eo parallelo congruunt m.51, ſec. 57. hoc eſt milliaria 51 $\frac{57}{60}$. partes vnius milliar. hinc fiet diſpoſitio terminorum proportionaliũ ad inueniendam differentiam longitudinis. milliar. 51. 57.m. (vel integra 52. quia tam exigua eſt differentia) dant vnum gradum ergo 600. dant grad. 11 $\frac{2}{5}\frac{8}{2}$. tantaque erit differentia longitudinis inter locum à quo proceſſeris eumq; ad quem perueneris. Inuertendi autem ſunt termini ſi data ſit differentia longitudinis quæratur autem interuallum: ſed illud eſt minus acccommodum, neque enim ſolemus data longitudine interuallum quærere ſed cõuerſò: neque enim adhuc modum obſeruandi longitudinum differentias habemus cognitũ, vtcunq; vani quidam homunciones magna oſtentatione hoc ipſum pollicentur. verum Expectata ſeges vanis deludet auenis.

Sequuntur quæ longitudine ſimul & latitudine differunt, quorum magna eſt varietas & multiplex differentia. Quatuor diximus in nauigandi ratione conſiderari: differentias longitudinis, itemq; latitudinis. Interuallum, & Rumbum confecti itineris. Duobus ex his datis inueniri poſſunt reliqua. Datorũ autem & quæſitorum tranſmutationes in his quatuor terminis 6. eſſe poſſunt ad hunc modum.

Data

Data differ. { Longitud. / Latitud. } inueniunrur { Rumbus / Interuallũ }

Data { diff, long. / Rumbo } inueniuntur { latit.differ. / Interuallũ }

Data { diff. long. / Interuallo } inueniuntur { latit.differ. / Rumbus }

Data { diff. latit. / Rumbo } inueniuntur { long.diffe. / Interuallũ }

Data { Diff. latit. / Interuallo } inueniuntur { Rumbus. / long. diff. }

Data { Rumbo / Interuallo } inuen.differ. { longitud. / latitudin. }

Singulis binis datis singula bina exquiruntur. Pleraq; ex his, (imo omnia quæ aliquem vsum præstare nobis possunt) per Globorum praxim perfici possunt. Hoc autem de vniuersis semel admonuisse sat esto. præter hæc data, latitudinem loci vnde profecti sumus & quartam mundi partem quam in nauigãdo sequuti sumus necesse est vt habeamus cognita: aliâs enim non poterimus commode quæsitis satisfacere. Causa est quia lõgitudinis, itemq; latitudinis differentia in duas mundi partes numerari solent. hæ quidem in septentrionem & Austrum,

illæ

illæ vero in ortum & occaſum. præcipue vero quia à ſingulis Meridiani partibus & ab vtroq; eius termino ducuntur Rumbi æqualium angulorum ſiue inclinationum vtcunq; diuerſorum nominũ : ideo niſi quarta mundi pars cognoſcatur verſus quam progreſſi ſumus, incerta erit inuentorum notitia. Si quærenda ſit latitudinis differentia, ea quidem inuenietur, at non poterimus definire vtrum ea numeranda ſit verſus Auſtrum vel Boream. Si longitudinis differentiam quæramus, eam licebit dare, at ignorabimus vtrum oporteat numerare verſus ortum aut occaſum. Cum Rumbus quæritur, inclinationẽ eius ad Meridianum licebit dicere, ſed non poterimus ſuam ei denominationem tribuere, niſi quarta mundi pars ſit cognita verſus quam alter locorum ab altero vergat nam à ſingulis Meridiani partibus Rumbi habent æquales inclinationes. His præmonitis ſingula diſquiramus.

Cognita differentiâ longitudinis & latitudinis duorum locorum, inuenitur Rumbus & interuallum.

Vertas Globum donec Rumbus aliquis in- 1
terſecet Meridianum in latitudine loci à quo proceſſeris, deinde voluas verſus ortum aut occaſum, vt res poſtulat donec gradus æquatoris numero æquales differentiæ longitudinis duorum locorum Meridianum pertranſeant, poſtea vide vtrum aſſumptus Rumbus interſecet Meridianum in latitudine loci ad quem peruenieris, quod ſi fecerit, is eſt confecti

itineris

itineris Rumbus; sin secus alius assumendus est, vsq; dum occurrat qui hoc præstiterit.

Exemplum. Serra liona Africæ promontorium est longitudinis grad. 15. 20. m. lat. Bor. grad. 7. 30. m. Inde nauigandum est ad Insulam S. Helenæ long. grad. 24. 30. m. lat. Austral. 15. grad. 30. m. quæritur Rumbus in quo conficiendus sit cursus. quem ad hunc modum inueniemus. Adiungamus Meridiano gradum 356. 40. m. longitudinis, & obseruemus Rumbũ quẽ Meridianus intersecat in lat. Boreali 7. grad. 30. m. (quæ est loci latitudo à quo progredimur) is est Thracius & Leuconotus, siue vt nostri vocant, Northnorthwest, and Southsoutheast. Voluatur deinde Globus versus occidentem (quia S. Helena orientalior est Serra Liona.) donec grad. æquat. 9. 10. m. (quot sunt differentia longitudinis) pertranseant Meridianum, & inueniemus in hoc Globi situ eundem Rumbum secari à Meridiano in latit. Austr. grad. 15. 30. m. quanta est latitudo S. Helenæ hic ergo est Rumbus qui ducit à Serra Liona ad S. Helenam. Hoc modo licebit inuenire Rũbum inter duo quæuis loca vel expressa in Globo, vel concepta cum hac conditione vt differentia latitudinis & longitudinis cognoscatur.

Si loca expressa sint in Globo inter quæ Rumbum quæris, extentis circini cruribus datorum locorum distantiam intercipe, eamq; cuique Rumbo applica (sed in ijs locis vbi transeunt parallelos latitudinis datorum locorum, vsq; dum inuenias Rumbum cuius portio intercepta datorum locorum parallelis, conueniat distantiæ inter circini crura interceptæ.

ceptæ. Exempli cauſa ſi velimus cognoſcere quis Rúbus ducat nos ab occiduo Africæ Promontorio (quod C. Cantin vocant) latitud. 32. 20. ad Inſulam quæ vocatur Canaria, lat. 28. interceptam locorum diſtantiam applicamus cuiq; Rumbo, ſed non alio in loco quam inter gr. latitud. 28. & 32 grad. 20 m. quæ ſunt latitudines datorum locorum: atq; inuenie-mus diſtantiam hanc applicatam Rumbo qui dicitur Africo ad Fauonium Southſouthweſt, ita vt alter circini pes inſiſtat latit. 32. 20. alterum incidere in lat. 28. eiuſdem Rumbi. vnde concludere licebit, à C. Cantin ad Canariam nauigationem inſtituendam eſſe Africo ad Fauonium. Sunt qui docent diſtantiam hanc locorum interceptam, applicare cuilibet Rumbo apud æquatorem in communi eorum concurſu. Sed hij falſa nobis tradiderunt ſuoſq; errores conſcripſerunt, vtcunque enim (quod fatemur) portiones eiuſdem Rumbi interceptæ binis parallelis æqualiter ab inuicem diſtantibus in qualibet Globi parte ſunt æquales, huiuſmodi tamen extenſiones non ſunt metiendæ. Rumbi enim prope æquatorem proxime accedunt ad maiores circulos, remotius plurimum incuruantur.

Inuento Rumbo interuallum quærimus. Nonius docet accepto inter circini pedes ſpatio 10 Leucas vel ſemiſſe vnius gradus, interualla locorum in dato aliquo Rumbo dimetiri. Alij intercipiunt 20. Leucas vel integrum gradum. neutrum probo, nec alterutrũ reijcio. hoc ſolum moneo pro locorum propinquitate vel remotione ab æquatore maiorem menſurã vel minorem accipi poſſe. prope æquatorem vbi Rú-

bi vt dictum est ad maiores circulos propius accedunt, maiorem mensuram intercipere licebit: cum longius ab æquatore discesseris quam possis minutissimam distantiam oportet intercipias, quia Rumbi plurimum incuruantur. Accuratius tamen multo ex sequenti hac Tabula cognito Rumbo & latitudinis locorum differentiá, interualla locorum mensurabis. Sic autem habet.

	gr.	m.	sec.	
Rumb. 1	1	1	10	
2	1	4	56	
3	1	12	9	
4	1	24	51	
5	1	47	59	
6	2	36	47	
7	5	7	33	

Hic autem monstratur quot grad. m. etiam & secunda æquinoctialis vel Meridiani conueniant vni gradui in quouis Rumbo. gradui autem vt sæpe diximus respondent 60 milliaria, singulis minutis singula milliaria, secundis autem sexagesimæ vnius milliaris partes siue passus 17 proxime. hinc licebit per regulam proportionum interualla locorum in dato Rumbo commodissime dimetiri, cognita latitudinis differentia, vel conuerso cognito interuallo latitudinis differentia innotescet. Exempli causa, A Promontorio Africæ quod vocant C. Verde lat. Boreal. grad. 14. 30. nauigatum est Africo ad Austrum South west and by South, ad vsq; Promontorium Brasiliæ C. S. Augustin. latit. Aust. 8 ½ quærimus horum locorum interuallum, ad cuius inuentionem sic disponimus proportionis terminos; 1. grad. latitud. in hoc Rumbo qui tertius est à meridiano habet 1 gr.

12 m.9 ſec.hoc eſt milliaria 72 $\frac{2}{60}$, ergo 23 grad. latit (quot ſunt inter C. Verde & C. S. Auguſt.) poſtulant milliaria 1659 $\frac{1}{2}$ fere ſiue Lucas noſtrates 553. paulo amplius: vt tantum ſit interuallum C. Viridis & promontorij S. Auguſtini in 3 Rumbo à meridiano dimenſum.

Cognito Rumbo confecti Itineris & longitudinis differentia, quæritur differentia latitudinis & interuallum.

Globum voluas vſq; dum occurrat locus ille vbi datus Rumbus Meridianum ſecat ad latitudinem loci à quo proceſſeris: inde vertas verſus ortũ aut occaſum, vt par eſt, vſque dum gradus æquatoris pares differentiæ longitudinis meridianum pertranſeunt, ſignaq; latitudinis gradum, quem idem Rumbus in Meridiano interſecat, is enim monſtrabit latitudinem loci ad quem perueneris. 2

Inſula S. Helenæ longit 24 gr. 20 m, lat. Auſt. 15. gr. 30. m. eſt, Inde nauigatum eſto ad Corum West North west, ad locum aliquem occidentaliorem grad. 24. quærimus eius loci latitudinem. Primo ſtatuatur Globus vt Rumbus ille interſecet Meridianũ ad latit. Auſt. 15. gr. 30. m. quanta eſt latitudo S. Helenæ, quod fiet ſi grad. long. 37. Meridiano adiungas. vertatur deinde Globus verſus orientem donec 24. grad. æquatoris Meridianum pertranſierint. Signatoque gradum meridiani quem idem Rumbus interſecat, qui eſt grad. Auſt. lat. 5. gr. 30. m. proxime tanta enim eſt latitudo loci ad quem eocurſu peruentum *Exemplum.*

est. Cognito autem Rumbo & latitud. differentia, interuallum ex præmissis facile colligetur.

Data longitudinis differentia & interuallo quæritur Rumbus & lat. differentia.

3 Non est quicquam in tota hac arte quod difficilius sit inuentu quam Rumbus ex dato interuallo & differentia longitudinis, neque aliâs quàm operosâ & sæpius iteratâ praxi & multis dimensionibus exquiri potest per Globorum vsum. cumq; sit hæc praxis tam prolixa & tanti laboris, minus est necessaria aut prorsus inutilis: quoniam longit. differétia difficulter inuestigatur vt supra monuimus. cuius rei inuentionem vtinam præstarent magni nostri ostentatores vt liceret tandé aliquid ab his expectare præter nuda verba, vanas pollicitationes & inanem spem. Sunt etiam (fateor) & aliæ praxes ex his quas hoc loco tradidimus minus item necessariæ ex eadé differentiæ latitudinis suppositione, at quia eorum praxis est facilior liceat exercitationis causa proposuisse.

Cognita differentia latitudinis & Rumbo inuenitur differentia longit. & interuallum.

4 Statuas Globum ita vt datus Rumbus secet meridianum in latitudine loci à quo processeris: deinde circumagas versus ortum aut occasum, vt res postulat, donec idem Rumbus secet Meridianum in

latitudine loci ad quem perueniris. vtroq; loco ſignato, numera gradus æquatoris interceptos Meridianis vtriuſque, tanta enim eſt longitudinis differentia.

C. D'alcuer Africæ Promontorium eſt lat. Bor. 30 gr. proxime, hinc nauigatum eſto Circio ad Fauonium North weſt by weſt, ad latitudinem 38. Boreal. item: quæritur longitudinis differentia. Vertamus Globum donec Meridianus ſecet datũ Rumbum in latitud. Bor. grad. 30. quod fiet ſi 7. grad. longitud. Meridiano applices. Conuertatur inde Globus verſus orientem vſq; dum Meridianus ſecet eundem Rumbum in latitud. grad 38. Bor. quod fiet cum gradus longit. 352. Meridiano acceſſerit. eſt itaq; locus ille ad quem perueneris occidentalior C. Dalguer grad. proxime 15 atque tranſit eius loci Meridianus per orientalem partem Inſ. S. Michaelis Aſorenſium. interuallum quomodo inueniatur cognito Rumbo & latitud. differentia dictum eſt in prima propoſitione. *Exemplum.*

Cognita differentia latitudinis & interuallo inuenitur Rumbus & differentia longitudinis.

5 Rumbus ex ea tabula quam ſupra poſuimus commodiſſimè inuenietur. Exemplo res erit manifeſta. à Promontorio Africæ maxime occiduo quod vocant C. Blanco quod eſt latitud. Boreal. 10. grad. 30. m. nauigatum eſto inter Sep. & occid. per interuallum milliariorum 1080. ad latitud. grad. 20. 30. m. Bor. item, quæritur Rumbus, ſic autem exquiritur,

ritur. differentia lat. est gr. 10. interuallum 1080 milliariorum, hinc orietur hæc terminorũ dispositio gr. 10. milliar 1080. congruunt ergo gr. 1. milliar. 108. quæ si diuidas per 60. in quoto 1. grad. 48. m. inueniemus, quem numerum si in tabula quæras inuenies Rumbo 5. adiunctum neque enim ille numerus minor est hoc nostro amplius vno scripulo secundo. vnde pronuntiare licebit nauigationem esse factam 5. Rumbo à meridiano inter Septentrionem & occidentem. Inuento autem Rumbo & cognita differentia latitud. longitudinis differentiam per secundam propositionem exquiras.

Dato Rumbo & interuallo, inuenitur differentia longitudinis & latitudinis.

[illegible] etiam per superiorem tabulam facile inue- [illegible] solum ad hoc etiam monstran- [illegible] Ab extremo Africæ Promontorio [illegible] spei vocatur, latitud. Austr. [illegible] est ad Thracium [illegible] (qui 2. est Rumbus à Meridia- [illegible] vel si placeat integris [illegible] latitudinis : quod hoc [illegible] & minuta quæ conue- [illegible] Rumbo conuerta- [illegible] 56. m. pro quibus [illegible] sic deinde sunt [illegible] mill. 65. congru- [illegible] grad. latitud. con- [illegible] loci à quo pro- [illegible]

fectum

fectum eſt, quia nauigatum eſt verſus æquatorem, reliqui ſunt gr. 25. lat. Auſtr. loci ad quem peruenimus. Cognito autem Rumbo & inuenta differentia latit. ex ſecunda prop, inuenietur differentia longitudinis.

De Rumborum ortu, natura, & vſu integrum tractatum expectamus à Thoma Harioto matheſeos & vniuerſæ Philoſophiæ peritiſſimo. à quo in hoc argumento multa ſubtiliter & acutè excogitata, magnâ induſtriâ elaborata, ſummo iudicio expolita ſunt, & ad Geometricarum demonſtrationum trutinam perpenſa: quem propediem edendum ſperamus. Hæc interim de eorum vſu, quatenus in Globis delineantur, ad noſtrum quod ſpectat inſtitutum, dicta ſufficiant.

Inſpectori Geographicæ deſcriptionis Globi terreſtris.

VT à vago & incerto intuitu Geographum minus exercitatum retraherem, & prolixæ ac moleſtæ diſquiſitionis tædio leuarem, ſequentem hanc Tabulam ſubiecì: in qua Regionum, Inſularum, Fluuiorum, Promontoriũm, Sinuum, Montium, & reliquorum quæcunque in terreſtri Globo exprimuntur, nomina omnia ordine Alphabetico digeſſimus, adiuncta ſingulis ſuâ primum longitudine, deinde latitudine, ſicut in his Globis ſtatuuntur. Iis etiam quæ latitudinem habent Auſtralem literam A, adiecimus auſtrina latitudinis indicem, quæ Borealem habent latitudinem ſolitariè ſine aliquo indice poſuimus.

	Long.	Lat.		Long.	Lat.
			A		
A Aiuari	303,10.	2,20 a	Acapulco	276,0.	18,0
– Aanſia	71,0.	43,20	Acartij Inſ.	329,0.	52,0
Abba dalcuria	86,30.	13,0	Acbul	154,20	49,0
Abbagarima	70,30.	8,0	Accha	18,30.	27,40
Aberdein	22,20.	57,20	Acchaguas	101,30.	5,30.a
Abeſt	68,40.	7,30	Achas	74,30.	50,40
Abiami	57,0.	7,40	Achbaluch	158,40.	50,20
Abiolho	92,10.	5,30.a	achelech mãgi	146,40.	45,0
Abo	47,50.	61,0	Achem	132,30	3,40
Abragama	156,0.	32,40	Aciſera	161,0.	46,20
el Abrigo	187,10.	3.30.a	Ackilk	12,40.	53,30
Abriojo	309,30.	21,30	Acna	77,50.	49,0
			Aſores Inſ.	357,0.	39,0

Aczu

	Long.	Lat.
Aczu	123,10.	49,20
Aden	82,0.	13,50
Adia	50,10.	25,0.a
Adu	105,40	5,40.a
Ægyptus	64,0.	30, 0
Africa op.	42,0	33,20
Africa reg.	40,0.	10,0
Agades r.op.	38,20.	25,30
Agiſymba r.	24,0.	7, 0
Agoch	68,20.	13,0.a
Agonara	162,20.	38.0
Agragam	144,30.	8,20.a
Agro	68,50.	6.20
Aguada	173,50.	7,50,a
aguada ſegura	253,30.	24,0
Aguada de pozos	245,20.	28,0
Aham	14,30.	24,30
Ahamara	14,15.	25,30
Aharach	27,10.	13,30
Ahuys	41,0.	56,50
Aiauiriſama	314,30.	2,40.a
Aiaz	83,20.	16,0
Aiazza	72,20.	39,40
Aiuoedo	42,48.	2,20
Alachi	70,0.	20,30
Alani mon.	98,40.	54,20
Alacranes	283,0.	22,0
Alagoa	58,40	29,40.a
Alaxa	83,40.	26,0
Alar	81,30.	38,40
Albaijadi	55,0.	17,40
noua Albion	235,0.	50,0
Albiron	109,30.	25,30
Albofera	37,20.	8,0
Alboram	25,30	35,30
Alepo	72,30.	38,0
Alcada	23,0.	40, 30
Aldea de Arboledas	323,30.	4,50
Alexandria	65,0.	31,20
Alexandria	106,50.	36,20
Algaſin	16,0.	29,0
Algieri	33,0.	35,20
Alguecet	63,40.	26,50
Alicante	28,40.	39,0
Alicoa	76,40.	13,20.a
Alicur	44,20.	38,30
Alima	108,50.	31,0
Allarch	83,30.	38,0
Alleluia	70,20.	10,0
Almedina	34,0.	33,40
Almeria	272,15.	20,0
Almiria	26,10.	37,20
Alpes mon.	41,30.	47,30
Alquos	78,0	9,40.a
Alſigubas	147,10.	38,40
Aman	74,0	38,0
Amara	63,30.	5,0
Amara	60,10.	19,20.a
Amaſtro	66,30.	44,30
Amazen	45,30.	12,40

	Long.	Lat.
Amazones reg	323,0.	13,0
las Amazonas	312,30.	12,30.a
Ambaſtu fl.	167,30.	50,0
Ambian cantiua	56,0.	5,20
Ambomo	162,50.	4,20.a
Ambon	164,30.	3,40.a
Ambrun	35,20.	44,30
Amioane	75,20.	12,40.a
Ammon	59,40.	27,10
Ammonis	45,30.	28,50
Amodabat	109,50.	23,10
Amſterdam	33,0.	51,30
Amu	143,50.	35,50
Amuncla	47,0.	29,10
Anaclon	112,10.	41,30
Anafi	19,15.	33.0
Anarei montes	116,0.	54,30
Anazaie	88,0.	15,0.a
Ancon	321,0.	6,20
Ancona	63,10.	1,10
Ancona	43,30	43,50
Anda	66,0.	8,10.a
Andemaon	129,30.	13,0
S.Ander	22,10.	43,10
S.Anderos	222,10.	10,50
Andernopoli	58,10.	44,40
S.Andra	170,30.	12,0
S.Andre	22,10.	56,20
Andre	105,40.	0,50.a
S.Andreas	62,10.	61,10
Andremiri	60,10.	43,10
Las Anegadas	296,0.	50,0,a
Angan	87,30.	30,30
Angieſei	19,50.	54,0
Anglia r.	23,0.	53,0
Angoleſme	27,0.	46,0
Angolia	45,10.	7,10.a
Angos	69,10.	15,50.a
Angote r.	67,0.	1,6
Angue	301,10.	50,30
Angug	63,0.	0,30
angugui	68,40.	6,0
anna	80,20.	29,40
S.anna	318,10.	27,30.a
annibi reg.	134,10.	63,0
anoſſa	29,50.	12,20
anſlo	36,30.	59,20
antigua	320,20.	16,10
antiochia	72,30.	39,0
antiochia	300,50.	6,40
antioſecta	68,30.	39,30
antipara	74,20.	25,20.a
antwerpen	31,20.	50,30
apamia	61,30.	43,40
apola	93,0.	21,30
aqua	350,30.	63,0
aqualega	86,40.	9,50.a
aquilaſtro	39,40.	40,0
aquile	42,50.	46,40

	Long.	Lat.
ara	14,20.	55,10
arabia felix	83,0	21,0
arabia deſert.	77,0,	30,0
aracam, reg.	132,0.	25,0
aracam op.	129,10.	24,10
arami	64,10,	17,20
arangas mons	46,0,	8,0
arboledas	272,30,	25,30
arcos	79,30.	19,0.a
ardagui	136,20.	5,10.a
ardauat	110,50.	25.0
ardoc fl.	104,10.	48,0
aredonda	331,20.	43,0
aremogan	118,0.	14,10
aren	76,10,	5,10
argel	84,30.	15,0
argin	11,10.	20,20
arglas	16,30,	54,20
ariadan	76,50.	20,30
ariander	109.20.	39 10
arica	300,30,	20,0.a
ariſſa	29,10.	8,30
aries	32,40.	44,20
arma	299,20.	4,40
armach	14,50.	54,0
armenia r.	76,0,	41,0
armeta	57,0.	17,0.a
armiro	53,10.	42,30
arnaltas mons	35,0.	11,30
arracifes	169,0.	10,30
arſenga	75,30.	40,40
artawiſcha fl.	108,20.	61,0
aruagu	137,50.	32,30
arzen	86,20,	33,30
arſila	21,20,	35.0
aſanad deſertum	20,0.	18,0
aſanad puteus	18,40.	21,0
aſcenſion	353,20.	18,50.a
La aſcenſion	15,30,	8,0.a
aſcention	290,30,	29,30
aſchnachua	62,0.	10,10.a
aſcer	65,50,	27,0
aſia reg.	130,0,	55,0
aſiot	67,0.	26,50
aſmelech	158,10.	47,0
aſmerei mõtes	137,0,	50.0
aſna	66,30.	23,0
aſpeſa	52,15.	44.20
aſpézi mõtes	100,0.	50,40
aſpicia	164,40.	47,20
aſſete Imans	94,30.	3,30.a
aſſuan	69,0.	22,20
Aſſyria reg.	85,0.	36,0
aſta	88,40,	18,20
aſta	66,50.	15.10.a
aſtapus fl.	64,0	4,0
Aſuga	66,40.	7,20
aſum	83,10.	8,30
atacama	303,30.	32,0.a
atalaia	283,0.	20,10
atalaia	291,0.	29,40
atalaia	27,50.	6,20

	Long.	Lat.
aranfa	159,40.	7,30.a
araualo	298,10.	1,30.a
athene	56,10.	40,0
aua	142,30.	27,50
audegen	120,30.	48,20
auegade	316,20.	19,0
auero	17,30	.41,10
augela	56,50.	27,10
augeſa	53,50.	18,40.a
auguſtin	293,0.	29,50
auiapari	317,0.	5,0
auignon	32,40.	44,40
aulona	51,20.	41,30
auociam	146,50.	34,0
auriaca	66,10.	9,20.a
ausburg	38,40.	48,30
auſun	130,30.	32,10
aux	27,40.	43,40
auzichi	18,40.	26.30
axa	244,30.	38,50
ayaman.Reg.	82,0.	25,0
ayque cheuonda	309,30.	49,50
ayauire	306,10.	18,40.a
azabar	75,30.	51,20
azamor	18,30.	32,40
azaphir	78,30.	33,20
azaſi	17,15.	32,10
aziric	68,50.	28,20
azur mons	59,0.	22,40
azzel	62,40.	1,30.a

B

	Long.	Lat.
BAbelcut	107,50.	20,10
Babel mãdel	80,0.	12,50
Babylon	82,20.	33,0
Bachanti	86,0.	47,0
Bachu	88,50.	42,0
Bachnapa	72,0.	4,0.a
Bactriana reg.	115,0	38,30
Badaios	19,40.	38,30
Badalech	125,0.	37,0
Baeca	303,30.	1,0
Baeruchi	74,10.	50,10
Bafar.	52,20.	21,40.a
bagamiddi	59,30.	5,0.a
Bagamidri	61,30.	6.0
Bagano	214,15.	13,40
Baglan	111,50.	28,20
Baglanca	114,30.	28,0
bagoſas lacus	77,10.	50,40
Baha	88,40.	24,30
Baham	176,30.	11,10
Bahama	296,30.	27,0
Baharam Inſ. & op.	87,20.	27,30
B.anegada	319,50.	40,10.a
B.debaxos anegados	321,30.	39,50.a
buena Baia	190,20.	4,40.a
B. de los condes.	320,20.	43,0
B.de Culato	282,0.	30,30

Baia

	Long.	Lat.
Baia dalagoa	56,10.	32 10.a
B.de fumos	240,20.	36,0
Ba.fin fundo	318,40	41,30.a
Baia de gente grande	303,0,	54,0.a
B.Hermoſa	54,20.	32,40.a
Ba.S,Iohan	309,40.	40,30
B.S.Lunaire	321,30.	49,20
Ba.de S.Migell.	39,30.	8,40.a
B.Orſinora	312,30.	41,0
B.de Pinos	233,0.	40,30
Baia de placeles	349,30.	1,50.a
B. de Raphael	72.0.7.	20.a
B.de ſaluad.	344,0.	20,0.a
Baia de S. Sebaſtian	83,20.	13,20.a
Baiburt	74.40.	42,30
Baicondel	131,20.	34,40
Baida reg.	125,0.	65,0
Baiona	17,20.	42,10
Baione	25,30.	44,0
Balaghna	78,30.	57,0
Balch	111,50.	35,50
Balgada	69,30.	5,0
Balſera	82,40.	31,10
Bamberg	39,15.	50,10
Bamplacot	138,40.	12,40
Bancare fl,	48,20.	4,0.a
Banda	164,0.	4,50.a
Banda	111,20.	15,30
Bandu	173,30.	33,0
Barbacua	11,10.	14,30
Barbada	320,50.	19,50
la Barbada	192,50.	1,50.a
Barbado	322,0.	13,0
Barbados	210,10.	8,50
Barbara	83,10.	11,0
Barca	62,15.	11,10.a
Barcena palus	65,20.	1,0.a
Bari	47,30.	41,0
Baricia	60,40.	4,40.a
Barko	47,50.	46,10
Barlingas	16,20.	39,30
Barnagaſſo r.	70,0.	13,0
Barquis	161,20.	35,10
Baſe Bartir	326,40.	70,30
S.Bartolome	194,30.	14,0
Barua	59,40.	3,0
Barua	73,50.	9,50
Baſel	37,10.	47,50
Baſo deſertum	49,0.	19,0.a
Batachina	157,30.	3,0.a
Baticalla	111,30.	12,40
Batimaſa	12,30.	13,0
Batnan	158,30.	9,0
Batombor	157,50.	5,20.a
Baxos de Abreojo	350,0.	18,0.a

	Long.	Lat.
Baxos de Chapar	148,30.	15,0
Bax. de India	66,0.	21,0.a
Bax. de los Pargos	345,30.	20,0.a
Baxos de patiano	78,30.	5,0.a
Baxos de villalobo	198,10.	14,0
Baycis	104,0.	35,40
Baye	77,50.	65,0
Bazipir	140,40.	37,20
Beciasa	65,0.	10,30
Becolicus mõs	56,0.	25,30
Beif	60,20.	18,20.a
Beigun	313,15.	17,10
Beil	76,15.	27,10
Belef	69,0.	51,40
Belle Isle	334,0.	52,20
Belisle	21,40.	47,0
Beler	75,15.	8,30
Belet	58,0.	1,10.a
Bellis	23,40.	34,20
Belloos r.	72,0.	17,0
Belor desertũ	125,0.	44,0
Belt	52,30.	50,0
Belugaras	57,10.	28,30.a
Benamataxa r. op.	55,0.	26,0.a
Benezueta	306,50.	7,40
Bengala r.	126,0.	26,30
Bengala op.	125,10.	21,20
Benichao	136,0.	3,50
Benigorai	25,0.	28,30
Benigumi	25,0.	30,0
Benin r. op.	41,0.	7,40
Benisabeh	21,20.	30,40
Benzerti	38,50.	30,30
Bepyrus mõs	143,0.	34,0
Bepyrus fl.	138,20.	34,0
Bera	56,50.	17,50.a
Berdena	61,10.	29,0
Berdoa r.	47,0.	26,0
Berdoa op.	51,10.	24,0
Bereou	87,0.	24,50
Bereswa fl.	104,40.	60,0
Berga	40,10.	62,50
Bergen	30,30.	60,50
Bermicho	52,20.	30,40
Bernicho	47,20.	44,50
Berwick	22,50.	55,50
Besegario	11,0.	10,20
Beslam	98,0.	37,0
Bethle	138,50.	25,40
Bexima	85,30.	51,40
Biafar reg.	50,0.	4,0
Biafar op.	42,30.	6,10
Bialigrod	58,20.	47,30
Bianza	150,0.	2,50.a
Bicheft	32,30.	32,40
Bichieri	65,30.	31,20
Bicipuri	141,10.	18,40

	Long.	Lat.		Long.	Lat.
Biela	64,50.	56,30	Bona	37,10.	35,40
Bielo	60,20.	60,10	Borcha	43,30.	3,20
Bigul	109,10.	40,20	Borgi	35,20.	30,10
Bilan	100,40.	41,30	Borgſe	40,30.	64,0
Bilbao	23,30.	43,0	Borno r.op.	48,30.	17,10
Bileas	298,30.	13,20.a	Bornholm	40,50.	55,30
Biledulgerid r.	37,0.	29,0	Botwijc	37,50.	64,0
Bilior	138,40.	1,50.a	Bouenberg	34,20.	56,30
Bima	151,20.	8,20.a	bouincas	296,50.	15,50
Bingiram	118,10.	16,0	brandenburg	42,30.	52,50
Bingiron	110,20.	24,30	braſil	5,10.	51,20
Bir	75,10.	35,40	braſilia reg.	345,0.	10,0.a
Biraen	131,40.	2,0	braua	74,30.	0,30
Biſinagar op.	114,20.	14,10	breid	12,30.	67,0
Biſinagar reg.	116,0.	13,0	brema	167,0.	47,10
Bitonin	19,0.	8,10	brema r.op.	138,20.	17,30
Blaskey	12,0.	51,40	bremen	35,10.	53,20
Blaues	31,10.	42,0	breſt	20,0.	48,50
Blauet	21,15.	47,50	breſt	331,0.	53,0
Bloe	5,30.	67,0	breton	61,0.	31,10
Bobroueſco	78,50.	60,40	brius fl.	142,40.	49,0
Boden	52,30.	45,30	brod	43,40.	49,30
Boetha	176,20.	11,30	bronſensko	77,50.	60,20
Boianare	309,40.	11,20	broſta	52,30.	51,50
Bolc	67,30.	44,20	bruage	25,30.	45,50
Bolcan	192,30.	3,40.a	bruges	29,0.	47,10
Bolcan	164,30.	27,0	buarcos	17,30.	40,10
Bolcanes	178,40.	24,30	buarili	61,30.	7,30.a
Bompruo Bepyrus Pto-lom.	138,30.	33,0	buda	48,0.	47,20
Bon	34,20.	50,40	budis	38,20.	30,0
			budomel	10,20.	14,30

buenen

	Long.	Lat.		Long.	Lat.
bueuen	29,30.	49,50	C.S.Auguſtin	162,0,	6,30
buge	71,20.	21,0	C.de S.Auguſtino	354,0.	8,30.a
bugia	34,30.	35,10	C.de las balſ.	44,50.	18,30.a
buguli	15,0.	9,15	C.baxo	328,0.	4,20
bulgar	88,30.	54,30	C.delas baxas	19,40.	15,30
bunace	68,30.	5,20	C.bedfort	320,0.	65,30
buque	138,0.	5,50	C.de berica	284,20.	7,40
burdeux	25,0.	45,10	C.blanco	273,20.	25,20
burgiam	105,50.	37,0	C.blanco	281,20.	10,30
burien	18,50.	50,20	C.blanco	330,10.	1,0.a
burneo	145,40.	4,50	C.blanco	331,20.	4,30
burneſi	147,0.	4,0	C.blanco	334,20.	52,0
buro	60,40.	24,0.a	C.blanco	9,30.	20,30
burro	160, 30.	3,20.a	C.blanco	289,40.	2,20.a
buſdachſan	110,0.	38,0	C.blanco	151,0.	22,40
butuhar	154,0.	7,30.a	C.bouet	348,30.	62,40
			C.braua	275,0.	27,30
C			C.de breton	331,0.	45,40
CAba	61,40.	9,30.a	C.cameron	287,20.	25,40
Cabac	59,30.	5,0	Cap.cantin	17,0.	32,10
Cabaru	350,40.	63,0	C.de S.catarina	41,0.	1,0.a
C.de bax.de Abreojo	347,40.	18,30,a	C.catoche	285,40.	20,20
C de alinde	346,50.	1,0.a	C.de chilan	96,30.	41,30
C.de S.aluiſe	324,40.	51,30	C.de chili	297,40.	35,40.a
C.del Ambar	83,30.	2,0.a	C,de collo	118,40,	12,30
C.de S.Antonio	289,15.	22,50	C.comori	115,0.	6,30
C.de S.Antonio	74,30.	17,0.a	C.de cõcritã.	45,30.	21,40a
C.de Arcas	44,30.	16,20.a	C. de corientes	261,30,	20,20

C.de

	Long.	Lat.
c.de corintes	344,	40.0,20.a
C.de corrientes	65,	40.23,40.a
C.de cro	31,	30.42,10
C.croce	65,	20.48,20
C.de crus	296,	0.28,0
C.de crux	296,	40.9,40
C.cur	135,	20.5.40.a
C.Dalguer	15,	50.30,0
C.Demeicij	301,	30.10,0
C.Derecho	71,	30.11,20,a
C deſierto	281,	20.29,20
C.deſperance	324,	30.51,0
C.Doeſmo	326,	0.44,30
C.de S.Domingo	315,	20.46,40,a
C.Droſey	13,	0.51,10
C.del Engano	158,	0.19,20
C.de los Eſlauos	340,	50.1,0.a
C.Facalhad	88,	20.16,30
C.Falſo	49,	0.34,30.a
C.Feare	305,	10.32,30
C.Felix	84,	30. 14,10
C.del fierro	112,	40.7,20 a
C.Finis terræ	16,	0 43,10
C.de Florida	293,	20.25,30
C.de Folcos	21,	20. 35,50
C.Formoſo	236,	0.33,30
C.Formoſo	28,	0. 5,0
C.de S. Franc.	291,	40.1,20
C.de S.Fire	335,	30.47,50
C.Frio	341,	15.24,0.a
C.Froward	302,	40.53,20a
C.del gado	71,	10.13,30.a
C.de gardaſu	86,	20.12,30
C.de Gato	26,	40.36,50
C.de Lopo Gonſalues	41,	20.0,10.a
C.de gratias a dios	289,	20.14,20
C.de la Guija	290,	20.5,40.a
C.Guaſco	300,	10.27,10.a
C.de S.Hele.	338,	30.43,0 a
C.de S.Hele.	294,	0.30,40
C.de S. Helena, vel C. blanco	326,	10.36,10.a
C.Heregua	177,	0.16,0
C.Heuchua gregua	178,	0.19,20
C.Hoa	163,	15.3,0
C.Santiago	294,	30.50,40a
C.de Santiago, vel de Orleans	323,	30.49,10
C.de Sátiago	309,	0.37,30
C.S.Ioan	323,	30.48,30
C.S.Iohn	62,	30.67,30
C.del Iſleo	42,	10. 4,0
C.de Iſoletti	92,	10.19,20
C.de las Iſlas	314,	0,40.20
C.de krin	13,	0.53,40

	Long.	Lat.		Long.	Lat.
C. Lacodera	311,	40. 9,	c. de Pescadores	277,	40. 28,
C. Ledo	45,	0. 9,	c. del Patel	352,	50. 5,
C. de Lexus	318,	20. 41,	c. de due põte	90,	20. 18.
C. de Lobos	45,	20. 14,	c. de Precile	89,	0 42,
C. de Mabre	311,	30. 50,	c. primero	353,	20. 6,
C. de Maio	82,	50. 15,	c. primero	293,	40. 47,
C. de S. Maria	77,	30. 24,	c. primero	42,	0 2,
C. de S. Maria	327,	20 35,	c. de 3 puntas	28,	30. 5,
C. de S. Maria	9,	40. 21,	c. de puntas	315,	20. 10,
C. Mendocino	23,	40. 42,	c. Rasalgate	96,	20 22,
C. de la Mola	36,	50. 6,	c. Raso	317,	40. 8,
C. de 3 Montes	293,	40. 48,	c. de Razo	334,	30. 46,
C. Morro hermoso	301,	0. 11,	c. Real	327,	10. 47,
C. Nasca	296,	10, 15.	c. de Roman	308,	10. 10,
C. Negro	44,	30. 17,	c. S. Roman	296,	40. 31,
C. Neuado	232,	20. 41,	c. de S. roque	76,	50. 25,
Cabo de Nombre de Iesus	308,	10. 53,	c. Roxent	16,	30. 38,
c. Ortegal	18,	30. 44,	c. Roxo	311,	0. 17,
c. de Pales	28,	30. 38,	c. Roxo	11,	0. 12,
c. de Palmas	348,	10. 1,	c. Salida	74,	0. 26,
c. de Palmas	350,	50. 1,	c. Spagia	349,	40 63,
c. de las Palmas	22,	40. 4,	c. bonæ spei	50,	30. 35,
c. de quatro Palmas	34,	10. 6,	c. de Spichel	17,	0. 38,
c. Passaro	46,	30. 36,	c. de Spiegel	353,	20. 7,
c. de S. Paulo	32,	0. 5,	c. de S spirito	295,	20. 52,
c. de Pennas	20,	50. 43,	c. del Sp. santo	161,	10. 13,
			c. de Stauola	12,	20, 54,
			c. de Tiburones	302,	0. 17,

	Long.	Lat.
c. Tienot	329,	40. 52, 30
c. de Torijga	11,	30. 18, 20
c. de las vacas	53,	0. 33, 40. a
c. la vela	305,	10. 11, 50
c. S. Vincẽt	302,	20. 53, 40. a
c. S. Vincent	17,	0. 37, 0
c. de virgin Maria	308,	0. 52, 10. a
c. Viride	9,	50. 14, 30
c. de bona vista	334,	20. 49, 10
c. de vittoria	297,	30. 52, 0. a
c. del vosador	155,	50. 19. 30
c. Walsinghã	321,	0, 63, 40
c. Zocheo	311,	20. 29, 0
cabra	10,	15. 14, 40
cabul	112,	20. 31, 0
caburz	84,	50, 22, 30
cacagiam	68,	0. 47, 0
cacamba monte	79,	0. 19, 30. a
chachoberio	63,	50. 31, 10
cachuchinar. op.	140,	30. 20, 0
cacianfu	149,	20. 49, 0
cacos	270,	30. 28, 0
cacubay	27,	20, 23, 50. a
adi	77,	30. 16, 30. a
adir	105,	30, 1, 20. a
ehobach	135,	0. 27, 30
cael	115,	40. 8, 0
cafe	17,	30. 7, 30
caffa	68,	50. 48, 0
cahol	148,	20, 5, 30
cahors	28,	20. 44, 50
caicolam	114,	30. 8, 40
caidu	163,	40. 51, 30
caigra	60,	40. 4, 0. a
caijem	86,	20. 15, 30
caim	154,	15. 44, 0
caimana	192,	50. 0, 20. a
caiman grãde	293,	40. 18, 0
caimanes	294,	40. 17, 50
cain	98,	30. 32, 20
canam Sabadibe	167,	30. 3, 0. a
caindu reg.	136,	0. 47, 0
caindu op.	137,	30. 47, 40
caingui	147,	40. 40, 50
cairo	67,	30. 30, 0
calaian	148,	50, 34, 20
calaiate	95,	30. 22, 10
calamaines	149,	0. 9, 0
calamate	98,	10. 25, 20
calamita	67,	40. 48, 10
calam	110,	40. 61, 40
calantan	138,	30. 4. 0
calara	96,	50. 25, 30
calatia	158,	0. 58, 30
calatia	95,	30. 26, 50
calbaca	136,	10. 35, 10

	Long.	Lat.
calba	118,30.	46,0
calburas mõs	50,0.	20,0.a
calco	269,40.	23,20
caldaran	83,0.	39,30
caldy	20,0.	51,40
calecora	121,20.	22,0
calecut	112,40.	10,30
cales	29,10.	50,40
caleture	118,10.	15,0
calgada	63,0.	6,10.a
calhat	90,30.	19,0
calibia r,	42,10.	36,20
california	245,0.	30,0
calinagam	119,30.	19,0
caliz	20,50.	36,10
cally	298,15.	2,40
calmar	42,30.	57,40
camanar	300,20.	16,30.a
camandu	103,20.	26,40
camareo	294,20.	21,30
cambaba	150 0.	8,10.a
cambalu	161,10.	51,40
camboa	19,20.	8,30
camboya r.op.	142,20.	11,40
cambriant	308,40.	48,0
camburi	137,20.	8,40
camentz	50,20.	52,40
camp.r.op.	143,40.	12,0
campa	351,40.	62,50
campar	134,30.	0,10
campion	148,0.	57,30
campu	162,20.	39,40
camul	136,40.	58,0
camultan	105,0.	32,0
camur	62,20.	17,10.a
cana	68,0.	25,40
canada	305,10.	50,20
canaga rio	11,0.	15,0
canagadi	290,40.	33,30
canagora	134,30.	32,40
canal del frayle	160,40.	8,20
cananoa	328,40.	24,50.a
cananor	112,30.	11,0
canaria	9,30.	27,20
candahar	110,40.	33.40
candia	59,30.	35,30
candnigar	160,50.	5,20
candua	114,10.	6,30.a
cane	25,50.	53,50
canfa	118,30.	27,0
cangre	67,20.	42,40
canicol	276,15.	15,0
caniem	99,0.	62,40
caninos	62,30.	69,10
cannaneral	292,50.	27,10
cano	31,30.	17,0
cant	104,0.	46,50
canta fl.	149,0.	25,0
canta, olim Gange	149,40.	25,0

	Long.	Lat.		Long.	Lat.
canuca	19,10.	15,20	carma	51,50.	15,10.a
canuia	20,0.	16,0	cartagena	300,0.	20,10
caona	259,40.	31,0	cartagena	28.20.	38,20
capilan	130,10.	14,10	cartago.	299,30.	3,10
capiapa	304,50.	34,0.a	carpart	76,0.	38,20
capilamba	138,0.	21,20	carſi	148,10.	35,50
capis	42,10.	31,0	carua	70,0.	11,50
capſa	40,0.	27,10	carut	91,30.	22,40
carabach	115,0.	34,0	caſam	96,10.	35,10
caracaran	154,0.	35,0	caſena r. op.	38,20	17,10
caracol	108,40.	48,50	caſma	295,10.	11,0.a
caraiam reg.	136,50.	41,0	caſſar reg.	132,0.	47,0
caraiam op.	139,50.	41,0	caſſar	119,30.	45,30
carambis	68,20.	44,50	caſſec	37,40.	51,20
caranganor	113,10.	9,40	caſsina fl.	121,40.	61,0
carao	85,40.	42,40	caſſor	106,30.	1,50
carapetam	109,40.	16,10	caſtrone	73,50.	58,0
caraſan	130,40.	42,10	caſtrum	165,10.	60,40
carcham	131,0.	49,0	caſtrum Portugalliæ	57,10.	20,20.a
carchi	143,20.	16,10	catabathmus	58,15.	31,30
care deſertũ	115,0.	54,0	catadubba	64,20.	10,0
carfur.	85,20.	11,10	cataio reg.	150,0.	53,0
carfga	78,40.	20,40	cataiſaſec.	115,0.	35,10
cargirt	106,20.	35,10	catarain	156,15.	14,10
cariaco	314,0.	9,0	catigam	128,0.	22,40
cariai	288,20.	10,20	catigara	173,50.	58,0
caribana reg.	310,0.	5,0	cariſelchebir	39,20.	24,10
caribana	298,50.	8,30	catnes	22,9.	58,30
caribes	316,10.	7,0	catwik	41,10.	69,10
carcora	53,0.	29,40	cauabaſi	95,20.	47,0
carocoran	153,10.	61,30			

cauas 308,10.17,20.a
caueo deſertũ 47,0.25,0.a
cauit 155,30.7,0
cauona 134,0.65,0
caxamalca 298,30.11,30.a
caxines nunc Trugillo 287,10.14,20
cayneca 49,10.32,0.a
cazan 86,20.56,30
cazelis 59,40.31,40
cazir 21,0. 34,0
cazirmut 86,30.19.50
cebaco 288,20. 13,0
cecicoue 60,40,48,10
cedu 105,0.1,20.a
cembuagan 155,20. 6,30
cemeniar 59,6, 10,0
cendergiſia 115,30.11,40
cenu 298,40.7,20
cerabaro 290,0 8,50
ceraſo 73,0.44,40
cerotiga 274,40.15,40
ceris 87,50.38,40
chaberis fl. 128,0.25,0
chaga 56,0.6,20.a
chain 86,0.55,30
chalis 43,10.66,30
chalon 31,30.48,50
chalon 32,30,46,30
champaton 281,10.18,40
chanſa fl. 55,0.14,0.a
charangui 299,0,2,40.a
charcas m. 310,0.24,30.a
charcuon 70,0. 8,40
chaſehaer 91,30.57,30
chaſteaux 335,0, 53,0
chaul 109.40 17,30
chayſure 100,50.46,50
cheapanok 307,0.35,50
chela 173,0,37,0
chelm 51,30.51,0
chelonides paludes 51,30.20,30
chenchi 147,10,22,20
chencran 131,10.20,50
chendi 88,40. 32,30
cheng 113,10.39,30
chepecen 99,10.41,40
chequeam 160,0, 33,40
cheramandel 115,20.22 30
cheſel fl. 106,10.46,50
cheſimur reg. 115,0.29,0
cheſimur op. 115,10. 3,0
cheſolitis 106,10.47,30
cheſſapiuk 308,0.38,0
cheſter 21,30.53,50
chereal 279,40.14,40
chiagri 83,10, 41,0
chialis 129,40.54,30
chialo 56,20,7,0.a
chiamay lac. 135,0. 24,0
chiametlan 260,0.25,40

chianea

	Long.	Lat.
chianea	172,0.	55,30
chianfu	147,30.	27,0
chichane	303 50.	14,0
chicheſter	26,10.	51,0
chidleies cap.	326,40.	67,30
chigi	28,40.	11,30
chila	271,10.	21,30
chilaban	117,40.	7,10
chilachi	313,40.	21,30.a
chilan op.	96,20.	41,10
chilchut	68,10.	11,0
chilenſn	153,50.	42,20
chili reg.	305,0.	30,0.a
chili op.	299,0.	36,30.a
chilimazata	294,30.	6,30.a
chilue	226,20.	43,20
chimines	302,0.	11,0.a
chimis	87,40.	48,0
chincha	302,40.	28,50.a
chincheo	154,20.	25,40
chinchiralas	139,20.	54,30
chinſingan	12,40.	15,0
chio	58,30.	40,30
chiguiſamba	305,30.	17,0.a
chira	282,20.	10,40
chira	296,30.	7,40.a
chirmam r.	97,0.	26,30
chirmam op.	98,30.	27,30
chirman r.	95,0.	36,0
chirmos	321,30.	4,30.a
chonel	78,30.	26,50
choe	96,0.	37,10
chuli	300,0.	17,30.a
chuquito	307,30.	19,30
chur	37,0.	47,0
cioca	134,10.	1,30
cianganorid	167,0,	54,0
ciaramichin	147,40.	29,50
ciartiam op.	133,50.	51,30
ciartiam reg.	136,30.	51,0
cibelrian	80,30.	19,10
cible	66,0,	18,0.a
cibuqueira	314,20.	17,10
ciguatan	268,40,	18,50
ciguateo	302,0.	27,0
cilia	14,15.	47,20
cincapura	136,40.	1,20
cingui	156,0,	42,30
cinna	67,0,	41,20
cintacola	111,20,	13,50
cintagui	146,40.	40,10
cipiſla	310,10.	19,30,a
cipribus.	136,10.	29,0
cirene	53,30.	32,0
cirote	130,40,	22,0
cirut	62,40.	15,30.a
citrachan	86,0.	48,0
cim	47,10.	66,30
claudia	318,30.	41,20
cleartis palus	57,0.	25,0
clermont	30,15.	45,50
coale	65,0.	21,30

	Long.	Lat.		Long.	Lat.
coaquete	65,10.	12,0	combalich	115,20.	56,40
coar	132,40.	23,0	comori op.	115,10.	7,10
cobina	102,50.	29,0	comos	286,0.	32,10
cocas mons	79,0,	47,30	concritan deſertum		
cochia	20,10,	12,10		47,0.	23,0.a
cochin	114,0,	9,40	condu	116,50.	36,0
cochinan	85,0.	39,40	congi	141,20.	51,30
cofla	62,30.	5,0.a	congu	147,20.	49,10
cogigamri	128,20.	52,0	coniga fl.	55,40.	14,0.a
coi	88,40.	39,0	conigangui	152,40.	44,0
coiandu	119,40.	43,10	coninxberg	49,10.	55,30
coiganſa	157,50.	43,20	connulaa	152,20.	26,30
coila	48,20.	3,10.a	conſtantinopolis		
colgoyne	68,40.	69,20		61,20.	44,40
colima	267,20.	19,50	copa	73,0.	48,40
colipo	69,20.	44,40	copaiapo	301,20.	26,40.a
collao reg.	310,0,	16,0.a	cophes fl.	118,0.	35,0
collo	35,10.	35,30	copini	129,10.	20,0
colmogori	62,40.	63,40	coppenhage	38,30.	55,50
colmucho	117,30.	6,40	coquimbo	301,20.	29,40.a
coln	34,0.	51,50	cor	90,20.	18,40
coloatan	269,0.	25,20	cora	85,10.	19,20
colochi	312.0.	21,20.a	coraſau reg.	108,0.	37,0
coloma	138,20.	28,0	corazam	74,10.	34,30
coloſna	52,0,	46,40	corck	15,40.	51,40
vna coluna	179,40.	30,0	corcora	67,50.	5,0
com	95,20.	35,40	corcoral	64,0.	1,40
comahaque	85,30	31,0	cordoba	316,20,	33,0.a
comania reg.	86,0.	51,0	coreo	31,20.	7,10
comania	68,0.	50,0	corfu Inſ.	22,0.	39,30
comatay	131,40.	22,20	choricho	42,30.	1,0

corinto

	Long.	Lat.		Long.	Lat.
Corinto	54,20.	39,0	Cotam reg.	130,0.	51,0
corniam	155,0.	10,0.a	Cotam op.	130,20.	50,15
Corol	141,40.	9,10	Cotam	145,30.	14,50
Coromoran fl.	153,0.	51,0	Cotan	119,30.	46,0
Coronades	295,30.	45,0.a	Cotenitz	88,30.	59,0
Corongo	302,40.	14,20.a	Cotia	32,0.	9,40
Corpo ſanto	84,10.	7,30.a	Couga	81,20.	28,30
Corrique	94,50.	21,40	Coulam	114,30.	7,40
Corſcan	90,50.	25,0	Couſa	66,20.	25,30
Corſica	38,10.	42,0	Cowno	53,10.	55,0
Cortad	56,50.	30,0.a	Cozumel	286,30.	19,0
Coruco	290,20.	32,10	Cracow	48,30.	50,0
Coruna	16,50.	43.20	cremuch	81,10.	44,50
Corus	108,10.	42,0	criſſa	53,50.	38,0
Corx	85,40.	18,30	croatamung	308,50.	35,40
Corzali	32,20.	35,0	croatoan	308,0.	34,30
Coſacan	89,0.	37,20	croix blance	335,20.	54,40
Cosbas	77,30.	40,20	cuaba	307,30.	21,30
Coſmai	90,10.	46,40	cuama fl.	64,30.	20,0.a
Coſmaledo	79,50.	16,50.a	cuara	72,40.	23,40.a
Coſmin fl.	135,30.	20.0	cubene	86,30.	46,30
Coſpetir	124,0.	33,0	cuba	296,0.	31,40
Coſſin op.	113,20.	64,0	cuchia	127,20.	53,10
Coſſin fl.	116,40.	63,0	cuchiao	311,40.	19,20.a
Coſſir	69,50.	24,50	cuchibachoa	306,30.	11,10
Coſtaque	83,20.	27.20	cucho	250,10.	39,40
Coſta duoyt	315,0.	51,30	cudobe	129,30.	17,40
Coſta poblada	247,30.	26,50	cueruo	353,50.	40,10
Coſta ſana	242,20.	29,20	cui	138,10.	8,20
Coſtnitz	36,15.	47,50	cuitachi	89,15.	40,50
			culauropa	80,0.	44,0

	Long.	Lat.
Culiacan	256,30.	27,0
culias	270,15.	26,40
cumanæ	313,30.	7,0
cumiſſa	50,20.	27,30.a
E.cumb.Iſles	316,0.	63,20
cumuca	119,40,	20,20
cunafion	119,30,	19,30
curamba	304,30.	12,50.a
curacoa	308,30.	11,30
curate	109.40.	20,10
curati	105,50.	21,0
curch	90,40.	32,0
curco	69,50.	39,40
curiacuri	153,50.	2,40.a
curia muria	90,0.	18.0
curiana	308,0.	10,0
curiat	93,50.	20,40
curm	120,50.	31,0
curdem	117,20.	35,0
cuſiſtan reg.	87,0.	32,0
cuſtra	89,40.	33,30
cuza	47,20.	43,50
cuzco r.op.	297,20.	13,30.a
cuzco op.	301,40.	17,40.a
cwareook	304,0.	33,40
cyprus	68,40.	37,30
czercesi	64,50.	51,10
czochloma	81,20.	58,40

D

DAbul	110,0.	16,40
Dacati	69,50.	26,0
Dagaoda	18,20.	7,0
Dager	56,20,	22,10.a
Dager Oort	48,40.	59,40
Dagma	92,40.	20,30
Dalaccia	77,0.	14,20
Damaſcus	74,30.	35,0
Dambili fl.	57,0.	13,10,a
Damiata	69,0.	32,40
Damut	51,0.	11,20
Damute	65,0.	13,0.a
Dangala	66,50.	17,30
Dangali r.	78,0.	11,0
Dangara	53,50,	10,50.a
Dantzik	46,0,	55,0
Dara r,op.	21,30.	29,40
Dara	66,50.	12,0
Daram	115,20.	37,50
Darate	146,50.	50,30
L.Darcies Iſland	327,50.	68,20
Darga	60,20.	11,40
Darien	295,40.	5,30
Darut	65,40.	18,50
Daſſow	63,0.	48,40
Data	131,20,	2,40
Dauagul	57,15.	27,0.a
Dauaſi	98,50.	49,40
Dauma r.op.	34,20.	8,0
Debſan	52,10.	13,30.a
Decan	113,20.	14,0
Dedma	56,30.	56,30

Degme

	Long.	Lat.
Degme	60,30.	22,40.a
Dehebet	93,30.	32,50
Deitam	142,50.	20,0
Delgoy	74,30.	67,20
La Delgraciada	211,20.	20,0
Delli reg.	114,0.	18,30
Delli op.	114,0.	19,50
Dembia	56,0.	3,0.a
Dembra	61,10.	13,40
Denia	29,20.	39,20
Derbent	84,50.	42,20
Derwind	47,50.	57,30
Deſeada	320,0.	15,20
Deſtor	59,0.	46,40
Deuenter	33,25.	51,50
Deuſen	31,20.	31,20
Dfina	74,30.	62,10
Dia	68,0.	24,30
Diamuch	109,30.	41,30
Diamuna fl.	131,0.	36,0
Diepe	28,40.	49,30
Diers cape	321,30.	64,50
Digir	40,0.	20,50
Dijon	32,0.	47,0
Diram	79,30,	12,10
Diu	108,0.	20,50
Diulfar	87,30.	16,40
Doam	89,40.	27,20
Doara	81,0,	8,0
Dobalia	63,20	19,0
Dobarea	69,50.	15,40
Dobretan	332,40.	43,10
Dobrowna	61,30.	54,0
Docono	78,20.	12,30
Doſarſo	65,30.	2,30
Doldel	52,30.	18,0.a
Domas caienhas	84,10.	22,0.a
Dominica	319,40.	14,0
Domnes	50,30	51,50
Don fl.	75,0.	53,20
Donatal	80,0.	18,40.a
Done	160,50.	36,0
Donecz fl.	71,0.	51,0
Donko	74,30.	53,20
Dornate	137,50.	7,30
Dorow	58,0.	51,30
Doſa	59,0.	27,10.a
Doſime	86,0.	21,0.a
Douer	28,10.	51,0
Drin.	50,0.	45,0
Drogebuſch	64,40.	55,20
Droger	332,0.	57,30
Drongenes	4,30.	66,30
Dronts	34,50.	63,40
Druzech	59,20.	54,40
Dubdu	25,0.	32,50
Dubino	35,20,	54,0
Dublin	16,40.	53,10
Duda	67,40,	13,40.a
Dumaran	150,0.	8,40

	Long.	Lat.
Duy	34,30,	59,20
Duyhe	56,30,	50,30
E		
EBaida	60,0.	25,30
Ecſonen	30,15.	58,10
Edenburg	22,0.	55,50
Eillach	109,0.	46,40
Einacen	73,0.	11,0
Elbuchiara	65,20,	29,30
Elcama	41,20.	37,30
Eleſia	52,0.	14,20.a
Eleſia	53,30,	11,40.a
Elgent	80,0.	17,20
Elie	25,20.	52,40
Eliobon	72,0,	27,0
Elior	26,20.	10,10
Reg. Elizabet forland	337,0.	61,30
Eloacat	65,20.	27,40
Embden	34,10.	53,10
Emil	122,40.	51,20
Endeſockee	306,50.	33,40
Enggi	55,10.	24,30.a
Ens	43,0.	48,30
Ens	74,10.	37,30
Epheſus	60,30.	39,40
Ercoas	65,20.	18,0
Erex	87,40.	40,50
Ergas	86,0.	38,0
Ergimul reg.	145,0.	59,1
Ergimul op.	150,0.	58,20
Erminio	151,50,	23,40
Eſpainulies	110,40.	40,50
Eſſer	66,50.	13,0
Eſtade	305,10.	47,40
Eſtahe aterradus Brettones	324,10.	45,20
Eſtazia	318,10.	17,10
Eſtrecho de Megallanes	305,0.	53,20.a
Euboia	56.	10,41,0
Euphrates fl.	76,40.	40,0
Euchar	93,20.	36,50
Europa reg.	55,0,	50,0
Exceter	22,	10.51,0
Ezerim	77,0.	42,0
Ezina	146,50.	60,20
F		
FAbabien	67,30.	3,20.a
Falazi	61,20.	15,30.a
Falczin	57,20.	47,0
Falſterhode	40,0.	56,0
Famagoſta	69,20.	37,30
Famaluco	106,10.	0,50.a
Farallones	294.20.	11,40.a
Farallones	333,20.	0,20.a
Fargana	114,40,	46,0
Farre	16,20.	61,30
Fartache	85,40.	16,10
C. Fartache	86,50.	15,40
Faſo	75,50.	45,40
Fatigar	74,0.	2,40

	Long.	Lat.
Fatnasa	38,10.	30,10
Fayal	356,0.	38,40
Feghig	25,30.	31,0
Feia	85,20.	21,10
Felicur	43,30.	38,30
Fernando buco	351,40.	9,20.a
Fessa r. & op.	21,50.	32,50
Fierro	6,20.	26,30
Finmark	47,0.	69,30
Flamborough head	25,20.	54,0
Flensborg	36,40.	55,0
Florentia	41,10.	43,40
Flores	353,40.	39,20
Florida reg.	292,0.	31,0
Focen	38,40.	66,30
la Formanos	310,30.	40,40
Formentera	31,10.	38,50
Forteuentura	11,0.	28,0
Foyl	15,50.	55,30
Frayles	314,30.	11,20
Francfort	36,30.	50,0
Francagromes	161,0.	12,40
Frason	172,20.	34,15
Fretum Gibraltar	21,30.	35,30
Fretum Dauis	324,0.	64,0
Friſlant	351,30.	62,0
Frobiſhers ſtraits	331,20.	64,0
Fugio	159,40.	45,10
Fugiu	158,20.	35,0
A Furious ouerfall	322,30.	60,0
Fuſſum	161,40.	37,10
Fungi	60,15.	11,0.a

G

GAbaca	80,50.	39,10
Gacha	74,50.	24,20
Gademes	41,10.	26,30
Gaga	57,0.	1, 0
Gago reg.	25,0.	8,30
Gaida	56,20.	5,40.a
Gainu r.	72,0.	4, 0
Galata	37,20.	37,0
Gale	50,20.	26,20.a
Galiota	44,50.	45,0
Galle	117,40.	6,0
Gallila	52,15.	16,0.a
Gamba	64,40.	17,30.a
Gambra rio	12,0.	13,10
Gant	30,20.	50,40
Garagoli	14,15.	29,20
Garamantica vallis	51,30.	16,0
Gargiza	62,40.	12,0.a
Garma	52,20.	26,0.a
Garnſey	22,20.	49,40
Gaoga	55,0.	22,0
Gauta	145,50.	56,50

Gaza

	Long.	Lat.
Gaza	70,50.	33,10
Gazabele fl.	62,30.	13,0 a
Gebage	56,30.	19,40,a
Gedmec	362,0.	61,40
Gelfeten	121,20,	32,50
Gemanacota	118,40.	6,0
Genaba	65,10.	10,50.a
Geneua	33,40.	46,20
Gengorde	315,15.	18,20
Genua	37,50.	45,0
Genua	15,20,	16,0
Geogan	58,10.	21,0
Georgio	64,0.	4,30,a
Gerbala fl	54,10.	14,0,a
Gerbo	42,0.	32,0
Gerguth reg.	153,0.	57,0
Germanareo	40,0.	51,0
Gerſeluin	24,30.	32,20
Geſch	94,40.	25,30
Geſt reg.	106,30.	26,0
Geſt op.	107,30.	26,30
Geſta	43,20.	60,50
Geues	314,40,	18,10
Ghez	21,0.	6,30
Ghir fluuius	25,30.	22,0
Ghir deſertum	24,0.	22,0
Giahel	71,20.	15,40
Giamber	81,0.	33,40
Giero	58,15,	21,0,a
Gieza	159,0,	36,40
Gilan	94,0,	39,20

	Long.	Lat.
Gilberts ſound	326,	50.67,0
Gilolo In.op.	161,30.	1,10
Gindagu	157,30	48,10
Gindu	157,0.	49,0
Ginduzi	138,0.	25,10
Giralo	56,40.	5,40.a
Giras fl.	41,20.	20,10
Girat	61,10.	10,0.a
Girgian	104,0.	40,20
Goa	112,20.	14,40
Godia	22,30.	18,10
Goga	109,20.	21,30
Glogau	43,50.	51,25
Gloſgow	29,0.	57,0
Goozin Rio.	74,30.	72,20
Goiame	57,0,	14,0.a
Goiaſancigo	269,10,	24,0
Gol.de S.Antonio	46,20.	26,0.a
Golfo de Bengala	125,0.	15,0
Gol.de Cayneca	49,0.	32,30.a
Gol.de Chalur	322,0.	50,30
Go.Frio	45,30.	20,0,a
G.de S. Helena	48,40.	33,30.a
Golfo de la India	44,20.	3,40.a

Gol.

	Long.	Lat.
Gol. de los negros	350,30.	2,0. a
Golfo de Papagaios	278,30.	12,30
Gol. de Pichel	65,0.	22,0. a
Golfo del Rey	40,40.	5,30
Golfo de todos ſantos	345,30.	1,40 a
Genera	7,30.	26,30
Gorage r.	69,0.	2,0
Goram	58,15.	28,30
Gorgona	295,10.	3,20
Gorides	81,20.	43,0
Gotlant	45,20.	57,30
Goto	75,30.	46,30
Gouſa	160,30.	50,40
Gozen	17,10.	31,30
Gozo	58,20.	34,40
Granada	318,20.	11,0
Granata	250,50.	36,30
Granata	23,30.	38,0
Græcia reg.	54,0.	40,0
Gratioſa	357,30.	39,30
Greneſted	5,30.	66,40
Greip	31,40.	63,30
Grodek	56,30.	51,30
Grodno	52,10.	53,50
Groeningen	32,10.	53,0
Groenland	0,0.	75,0
Groye	21,0.	47,20
Guachacal	303,10.	10,50
Guachabamba	297,20.	8,40. a
Guachde	24,0.	30,0
Guaden	21,20.	28,30
Guaham	176,30.	12,40
Guaian lacus	147,30.	45,20
Guaiaquil vel S. Iago	294,30.	2,30. a
Guadalquibil	282,20.	31,0
Gualabamba	294,50.	0,10
Gualata	13,30.	23,30
Guanaba	303,0.	8,40
Guanape	294,50.	8,10. a
Guanaxos	284,0.	15,30
Guangara r. op.	44,0.	13,40
Guanima	303,0.	24,20
Guardalupa	319,20.	15,20
Guargala	37,30.	25,50
Guber r.	27,0.	9,0
Guber op.	29,20.	10,40
Gubu	87,20.	16,0
Gudan	48,20.	8,50
Guegeue	22,50.	14,0
Gues	87,40.	29,10
Guenonda	302;40.	46,10
Guerde	95,10.	33,0
Guignam	178,0.	16,40
Noua Guinea	180,0.	5,0. a
Guinea reg.	18.0.	9,0

Gulye

Gulye 33,30.50,40
Gunagona 67,30.6,0
Guſtina 109,30.56,10
Guzuta 18,40,29,20

H

HAba 60,40.2,50.a
Hacari 298,15.15.40.a
Hagala 59,20.21,20.a
Hales Iland 337,50.63,0
Haliber 78,40.20,10
Halla 77,40.37,50
Hallicz 52.50.48,40
Hamacharic 68,10.30,30
Hamborg 37,10,53,20
Hammar 31,40.60,30
Hanguedo 310,30,52,0
Haroda 54,40.5,0.a
Hartelpole 24,0.55,20
Harutio 304,0.25,30
Harwich 27,30,52,0
Hatoras 308,30.34,40
Hauana 292,10. 20,0
Hebrides 15,20.58,0
Heidelberg 36,0. 49,0
Heiſt 23,30.46,30
Heiſant 19,30. 48,40
Heit 79,40.22,40
Helel 23,50. 31,40
Heptapolis 324,30.25,20
Hercules 69,20.32,10
dos Hermanas 182,40.25,0
Heti 99,50.30,0
Heylichland 33,50. 66,0
Hibeleſet 69,10.27,30
Hiere 63,20.12,40.a
Hibernia 16,0. 53,30
Hiſuret 15,10, 26,30
Hinbedeſex 14,15.27,0
Hippodromus Æthiopiæ 12,30. 17,20
Hircania reg. 100,0.40,0
Hiſpania reg. 25,0. 40,0
Hiſpania noua reg. 280,0.13,30
Hiſpaniola 306,0.18,30
Hochelaga 300,50. 44,10
Hoden 18,0.19,30
Hof. 12,40. 68,0
Holindal 36,10. 61,0
Homey 61,30.52,50
Homi 169,20.37,0
Hormar 165,20.35,10
Honts Oort. 48,30.59,0
Horno 12,10.66,10
Horo 178,20.21,10
Hugero 52,10.6,40.a
Hul 25,20.53,40
Humos 330,30.7,30.a
Hunedo 324,0, 51,30
Hungaria 50,0. 48,0

	Long.	Lat.
Hurma	68,40.	18,30
Hydaſpes fl.	124,0.	33,20
Hypaſis fl.	124,0.	33,0
I		
Iabaque	303,15.	17,15
Iabo	306,10.	22,10
Iaci	135,0.	40,30
Iacubi fl.	93,0.	48,0
Iadie	58,20.	11,40
Iafuf	77,0.	19,30
Iamaica	298,30.	17,0
Iambue	72,30.	26,30
Iameri	125,50.	23,50
Ianaluiz	319,30.	43,40
Ianathay	156,0.	44,30
Ianco	98,40.	45,40
Iangio	163,10.	47,10
Iapara	141,20.	7,40.a
Iarchem op.	117,30.	44,30
Iarchem reg.	117,30,	44,0
Iaponcs	169,0.	36,0
Iardines	189,30,	9,30
Iarſey	23,0.	49,20
Iaſtitem	42,50,	28,0
Iatim	151,10.	34,0
Iaua maior	140,0.	9,0 a
Iaua minor	150,0.	9,0.a
Iazin	77,30.	20,30
Idita mons	164,0.	54,40
Iepdip	30,0.	58,40
Iericho	73,0.	33,0
Ierom	100,10,	55,0
Ieruſalem	72,20.	33,0
Ieſd	94,40.	32,0
Ighidi	32,50.	25,0
Iguas	288,0,	32,0
Iherua	58,20.	1,0
Iliere	61,10,	21,0.a
Ilment fl.	305,0.	27,0
Imaus mons	128,0,	39,0
India orientalis	135,0.	26,0
Indion	105,40.	38,0
Indus fl.	115,30.	26,0
Inſpurg	40,40.	47,50
Tres Inſulæ	169,20.	2,0,a
In,de Aiman	146,30.	19,0
Iſlas de don Alfonſo de Aluares	202,0.	8,0
I.de Aſſumptione	324,0.	52,30
I.de Atel.	334,20.	55,40
I.de aues	310,30,	11,20
I.de aues	173,50,	4,30
Ilhe Bacailo	335.0.	48,30
I. de Baſtinado	293,30.	10,30
I.de Benjaga	149,50.	22,0
I.Blanca	316,50.	14,40
I.Braua	1,20.	14,20
I.del Canno	282,15.	8,20

I.de S. Catelina 334,10.27,30.a
I.de Cedros 240,30.29,50
I.do S. Colunas 178,50.30,30
Islas de Corales 194,40.9,50
I.desierta 178.0.31,0
Ilhas despera 395,0.46,40
I. de Enganno 130,40.5,40.a
I. Falconum 142,30.68,20
I.de Fernandi 41,0. 4,0
I.de Ferran. Larontro 354.20.2,20.a
I.del Fuego 2,30. 14,20
I.del Fuego 181,30.27,40
I.Gallao 296,20. 14,0.a
I.del Galo 294,0. 1,50
I.de don Galopes 94,30.18,30.a
I.de los Galopegos maiores 281,10.4,0
I. de los Galopegos menores 277,30.1,0
I.de Galparico 204,20.14,40
I.de Gamo 105,40.3,40.a
I.de Garcea 162,20.2,0.a
I.de Gonzalo Alueres 30,30.38,40.a
I.de Gratia 97,20.6,30.a
I.de Hombres blancos 169,20.5,40.a
I.de S. Iago 158,20.8,0.a
I. de S. Ilefonso 175,0.8,0
I.S. Ioannis 312,0.18,0
I.S. Ioan. 325,30.42,30
I.S. Iuan 164,30.6,0
I.S. Iuan de Lisboa 84,20.26,40.a
I.de Iuan Miz. 74,0.21,10.a
I.de Iuan de Naua 71,50.17,10.a
I.de S. Iulien 333,0.51,40
I.de los Ladrones 177,20.15,0
I.de Languin 158,30.27,0
I.de Lima 295,10.22,30.a
I.de Lobos 307,40.40,20
I.de Lobos 290,20. 7,0.a
I.de Manglares 288,40,12,0
I.de S. Maria 296,30.37,20.a
I.de Martin Vaz 10,40.21,40.a
I.de los Martires 181,20.22,50
I.de los Martires 175,15. 5,0
I.de Maio

	Long.	Lat.
I.de Maio	4,30.	14,30
I.de Micao	170,30.	39,40
I.S.Michael.	0,0,	39,30
Iſlas de Minuaes	358,0.20,20.a	
I.de los Nadados	194,30.5,50	
I.de Negros	155,30.10,30	
Iſlas Negras	281,10.23,30	
I.des Oiſeaux	334,0,50,0	
I.de Orleans	312,0.50,30	
I.do ouro	128,40.1,20	
I.do ouro	125,40.1,30	
I.de Paiaros	314,0 12,40	
I.de Palmas	163,20, 6,0	
Iſla de Paxaros	198,50.8,50	
I.de Paxaros	234,20.28,0	
I.de Perlas	293,10, 7,0	
I.de Pinos	292,20.21,30	
I.del Poſo	343,30.22,30.a	
I.del principe	39,40. 2,0	
I.de Rees	162,0.25,20	
Iſlas de Reyes	199,40.9,0	
I.de Sal.	4,10, 16,30	
I.Salomon.	204,0.10,0.a	
Iſlas ſecas	46,20.29,30.a	
I.de Sembriro	130,0.9,50	
I.de buenas ſennales	161,0.9,30	
I.de ſerrauilla	294,40.15,30	
I.Solis	347,40.10,30	
I.S.Thomæ	38,0. 0,0	
I.de S.Thomas	252,0.20,10	
I.Tinhoſa	146,0.18,10	
I.de Triſtan de Acuna	26,30.36,0.a	
I.Verde	353,50,45,30	
I.de los dos Vezinos	195,30, 6,30	
I.de S. Vincent	73,20.20,30.a	
I.de S.Vincent.	175,50.8,0	
Ioam	135,0,7,30	
Iolofo r.	24,30, 6,0	
Iontros	54,10,26,40.a	
Ioppe	71,20.34,0	
Iorgowtz	76,30.57,40	
Iorman	89,20 56,30	
Iotama	57,30.35,30.a	
Ipedra	293,30 30,30	
Iquareg	53,0.8,10.a	
Iſabella	305,20.18,50	
Iſland	8,0. 66,0	
Iſtigias	110,30.39,40	
Italia reg.	42,30 43,0	
Ithra	57,30.4,50.a	
Iuca	134,30.8.0	
Iucatan reg.	283,0.18.0	
Iugor	138,0. 7,50	
Iunca	31,20.39,30	

	Longi	Lat.
Iulibella	61,0.	1,30
Iumbi	312,40.	6,30

K

KAlmuchi Tartari	95,0.	51,0
Kama fl.	86,0.	60,0
Kaniow	63,40.	51,10
Karakithah reg.	119,0.	51,0
Karatzef	67,20.	53,0
Kargapole	66,30.	61,50
Kasakki Tartari	103,0.	51,0
Keuaner	56,10.	61,30
Kiow	62,20.	51,20
Kiro	46,40.	64,40
Kirgessi	125,0.	45,0
Kithais reg.	110,0.	57,0
Kithay lacus	123,30.	53,0
Kola	54,50.	69,0
Koleuig	4,10.	65,10
Kolunna	71,40.	54,20
Kondori	93,20.	61,50
Kosar fl.	96,40.	49,0
Kossera	71,0.	53,40
Kouloay	65,20.	64,10

L

LAcari	74,10.	16,10
Lacierna	24,50.	39,30
Le lac de Goulesme	306,40.	48,0
Lacus Annibus	131,0.	60,10
Lacus Maracayba	306,30.	9,0
Lacus salsus	137,40.	47,30
Ladena	53,30.	41,30
Ladoga	62,10.	61,40
Ladrios	155,20.	14,0
Laghi	81,40.	14,50
Lagnes	11,40.	68,10
Lago de los Coronades	295,0.	44,0.a
Laia	45,30.	64,10
Lamon	73,0.	41,50.a
Lampesa	36,20.	33,0
Lampuraa	138,50.	38,30
Lancerota	11,40.	29,30
Langor	141,15.	11,20
Lanow	51,10.	52,20
Lanos fl.	169,40.	49,0
Lapusna	60,30.	47,40
Laquille	310,20.	49,0
Lar	91,10.	29,0
Laredo	22,50.	43,0
Larissa	70,0.	33,0
Larta	53,0.	46,0
Leghe	62,40.	21,20.a
Leekenes	23,30.	58,0
Legula	55,0.	10,10.a

Lempa

	Long.	Lat.
Lempa	274,10.	16,50
Lempta	36,50.	24,30
Leon	21,10.	42,15
Leon	283,40.	11,20
Leopolis	52,50.	49,0
Lepin	98,0.	58,40
Lequio maior	165,0.	28,0
Lequio min.	158,40.	22,0
Lerida	28,20.	41,30
Lesterpoint	335,0.	62,0
Leuma	63,30.	14,40.a
Lezer	87,30.	24,40
Lichi	145,30.	23,0
Lick	50,20.	53,50
Lima op.	296,40.	23,30.a
Limahorbaz	85,30.	27,10
Limana	304,50.	24,40
Limonia	72,10.	44,20
Limosa	43,30.	34,50
Linag	56,10.	1,0.a
Linga	139,50.	3,30.a
Liompo	160,20.	34,40
Lion	32,40.	45,40
Lion mons	77,0.	29,0
Liorne	40,20.	43,30
Lipai	45,30.	38,40
Lisboa	17,30.	39,10
Lizard	18,30.	50,10
Loest	30,40,	58,0
Loffoet	38,10.	69,0
Loghe	113,0.	20,0
Lomfara	39,40.	29,0
Lonbiero	318,20.	18,40
London	25,50.	51,40
London coſt	326,20.	72,0
Longur	134,20.	10,50
Lop op.	134,20.	53,0
Lop deſertum	135,0.	55,0
Lopeſo	74,0.	49,40
Loron	91,20.	28,20
Loſa	62,10.	18,40.a
Loſaun	34,20.	46,50
Loyreſt	24,40.	47,40
Loxa	293,30.	3,50.a
Lubec	38,30.	53,50
Lucaio	299,0.	27,30
Lucho	57,20.	31,30
Lucka	42,10,	52,0
Lugana	79,40.	25,40
Luki	64,0.	58,20
L. Lumleis inlet	320,0.	61,0
Lunæ montes	60,0.	16,0.a
Luno	64,50.	44,20
Lundi	19,30.	51,0
Lutzko	54,0.	50,20
Luſon Inſ.	156,0.	17,0
Lybia palus	33,0.	23,30
Licomedes Palus	62,0.	24,20

	Long.	Lat.
M		
MAao	178,20.	20,20
Maarazia	118,30.	22,20
Maboga	62,40,	13,30.a
Macara	32,20.	30,10
Macare	76,20.	20,50
Maceria	43,10,	1,20.a
Machian	160,40.	0,30
Machlunaria	111,40.	26,30
Machoenta	39,50.	33,50
Machon	65,20.	8,30
Macin	85,30.	25,50
Macopa	132,50.	1,10.a
Macra	63,40.	39,20
Macsin of Ilands	62,30.	75,30
Macyra Inſ.	93,0,	19,40
Madagaſcar	77,0.	19,0.a
La Madalena	44,40.	7,0.a
Madera	8,10.	31,30
Madinga	32,50.	13,0
Madura	146,30.	6,50.a
Mæotis palus	71,30.	49,30
Magadaxo	78,0.	5,10
Magalo	71,20.	9,30.a
Magora	77,50,	18,40
Magurada	13,0.	9,30
Mahag	64,20.	4,30
Mahambana	54,0.	32,0.a
Maiaguana	306,0.	23,40
Maidas	2,40,	46,30
Maima	47,20.	10,40
Maiorica In.	39,50,	33,0
Maitagaſi	48,20,	11,20
Maiſaro	152,30.	28,30
Malabrigo	178,50.	26,0
Malaca r.op.	136,30.	2,50
Malaga	23,50.	37,20
Malati	78,0,	32,40
Malana	75,0.	38,20
Maldiuar Inſulæ	113,0.	3,0
Malha	93,30.	11,0.a
Maliapor	118,0.	13,20
Malines	279,40.	13,40
Malor	82,40.	10,20
Malorca op.	39,50.	32,50
Malpelo	290,20.	4,0
Malta	46,0.	35,30
Mamora	155,40.	0,40
Man	19,0.	54,50
Manado	147,20.	6,30
Manadu	157,50.	0,30
Manaiba	77,10.	22,20.a
Manapata	78,10.	20,50.a
Manatenga r.	77,0.	22,20.a
Manda fl.	138,0.	21,0
Mandalican	142,30.	8,0.a
Mandao r.op.	121,0.	25,0
Mangalor	112,0.	11,30
Mangeſia	61,30.	41,30
Mangi ſiue China reg.	150,0.	37,0

	Long.	Lat.
Mangopa	131,10.	3,10
Manica	62,50.	23,30.a
Manicongo reg.	46,40.	5,0,a
Manicongo op.	47,20.	7,0.a
Manilia	156,20.	15,0
Maniolæ Inſ.	140,30.	2,0
Manſua	95,30.	45,40
Mantra	79,50.	7,0
Mapazo	307,30.	7,40.a
Mara	75,20.	37,0
Maracapana	312,10.	8,0
Marach	119,40.	8,40
Maramma	56,40.	9,0.a
Maranga	281,30.	19,30
Marannon fl.	323,0.	7,0.a
Marafia	146,30.	26,40
Marata	262,0.	32,30
Maratuc	305,0.	36,30
Marchant Ile	327,0.	68,20
Marcoa	58,50.	7,10,a
Mardin	82,10.	34,50
Mar de Bachu	92,0.	45,0
Mare congelatum	345,0.	64,0
Mar de India	120,0.	10,0.a
Mare maior	68,0.	45,0
Ma. mediter.	50,0.	35,0
Ma. rubrum	75,0.	20,0
Ma. Vermejo	255,0.	26,0
Ma. del Zur	270,0.	10,0
Maregui	134,30.	13,0
Marei	52,0.	26,10
Margarita	314,10.	10,50
Margus fl.	111.	30. 52,0
Las Marias	260,0.	22,0
Marib.	86,30.	17,30
Maricalperapo Inſ.	130,40.	14,0
Marigalante	320,0.	14,50
Marinos	306,20.	40,40
Marocco	20,0.	30,30
Marſeille	33,50,	43,40
Martaban	134,30.	17,10
Martinino	320,0.	13,10
Maru	105,40.	41,0
Maſalig	23,30.	30,20
Maſauiz	96,20.	47,40
Maſcalat	86,40.	22,20
Maſia	280,40,	13,20
Maſta	47,10.	26,40
Maſta	63,40.	8,30.a
Maſtagan	30,20.	35,20
Matalotes	169,50.	10,40
Matan	153,10.	25,50
Matancos	296,0.	25,0
Matcin	116,40.	27,0
Matflo	76,30,	67,30
Matqua	89.	30. 18,20
mayma	26,20.	14,0
mazacar	169,0.	33,0

	Long.	Lat.
mazua	79,30.	5,40
meaco	60,30,	23,15.a
meandrus mons	152,0.	31,30
meb	46,30,	54,40
mecha	75,30,	25,0
mechenderi	130,40.	40,0
medano	295,0.	31,10
los medanos	60,20.	30,0.a
medellian	20,50.	39,0
medina celi	23,30.	41,10
medina talnabi	73,0.	27,20
medino	98,30.	36,30
medra	45,20.	11,20
medua	30,30,	32,30
megiran	134,30,	34,40
meidburg	39,40.	52,0
meiſſen	41,0.	51,10
mellegete	26,50.	7,20
melilla	25,0.	34,20
melinde r.op.	71,20.	3,20.a
melli reg.op.	15,40.	12,0
meluing	48,0.	54,50
memel	48,40.	56,50
menacabo	134,50,	4 40,a
mendoza	305,50.	32,50 a
menlay	165,40.	36,30
mens	35,50.	50,0
menſa	59,0.	4,0,a
menſuria	73,30.	17,40
meraga	55,30.	7,20
meren	93,20.	39,40
meroë	68,20.	16,15
meſab	32,0.	28,40
meſat	101,50.	36,50
meſhet	85,30.	52,50
meſhite	267,30,	25,30
meſopotamia	78,0.	35,0
meſſa	17,0.	19,30
meſſana	45,50.	37,50
meſſet	91,30.	31,50
meſſi	61,30.	38,40
meſtzora	75,10.	55,0
mete	84,50.	11,50
meti	53,50,	13,40.a
metlan	264,0.	24,10
mette	106,40,	23,50
metz	33,30.	49,45
mezrata	47,40.	30,40
mezu	133,50.	35,40
miaco	170,30,	37.0
miaos	159,0.	2,30
mien r.	136,0.	31,0
mien op.	139,30.	29,50
miensko	56,40.	54,50
miguel	297,0.	4,0
milan	38,30.	46,10
millo	57,50,	36,50
mina	28,50.	6,20
mindanao In.	159,0.	8,0
mindanao op.	160,40.	7,10

minden

	Long.	Lat.
minden	35,30.	52,40
mindoro	154,20.	12,40
mingiu deſertum	100,0.	31,0
minorca	34,30.	40,0
miracomouas	179,20,	6,30
miracomouas	302,20.	21,40
La mocha	295,40,	38,10.a
mocheſtan	92,40 .	27,20
modon	53,20.	37,0
modzir	59,50.	52,0
mogar	57,10.	24,30 a
mogile fl.	59,30.	54,0
moguer	20,0.	37,50
mohimo	55,10.	53,40
moi	86,20,	25,30
moitagaſi	58,40.	17,50.a
molalle	74,50.	12,10.a
moldauia reg.	55,0,	47,0
molines	30,20.	46,40
moltan	114,20.	24,30
moluccæ Inſ.	160,40.	1,0
mombaſa	72,0.	4,50.a
mombeza	79,0,	8,10
momorancy	306,0.	47,0
mompelier	31,30.	44,10
mona	309,30.	18,0
monaſterio de la viſione	73,30.	12,0
monenſtro	60,40,	47,10
mongala	66,30,	18,20.a
mongul reg.	160,0,	61,30
mongul op.	159,20.	60,40
Los monges	208,30.	9,40
monjes	307,30.	11,30
monſia	73,0,	8,10.a
monſorate	319,10.	15,40
montagala	100,20.	43,a
montagna	311,20.	41,0
monte de bramidos	47,10.	30,15.a
mote eſpeco	317,50.	8,0
monte fragoſo	344,0.	12,0.a
monte negro	44,40.	17,0.a
mount Ralegh	320,30.	65,0
mont royal	301,0,	45,40
mopox	301,10.	10,0
mora	99,40.	44,20
morea reg.	54,30.	38,0
moſaik	68,50.	55,0
moſambique reg. & op.	70,20.	14,40.a
moſcouia reg.	80,0.	59,0
moskow	70,30.	55,40
moſſa	84,30,	35,0
moſul	84,0.	34,50
mota	299,40.	20,0
motil	160,40.	0,0
motines	265,20.	20,30

	Long.	Lat.
motros	22,20.	56,50
mozena	24,20.	34,30
moſcenek	69,50	51,30
mubar	136,30.	2,20
mugu	118,30.	42,50
mullubába	296,20.	2,40. 2
multan	109,50.	29,20
munia	67,0.	28,0
munſter	35,0.	52,10
muron	76,0.	55,40
mus	81,50.	37,50
mut	102,50,	32,40

N

NAbarz	79,50.	50,50
Nachaus	35,40,	32,0
Naco	283,20.	12,30
Nada	58,30.	8,10. 2
Nagai tartari	97,0.	53,30
Nagapatam	117,50.	10,0
Nagari	151,30.	26,40
Nagra	118,10.	34,0
Naguebar	130,30.	4,50
Nagundi fl.	119,0.	17,40
Naim	94,10.	33,40
Naiman reg	140,0.	64,0
Naiman op.	140,0.	65,10
Namen	31,10.	50,0
Nantes	24,10.	47,50
Napata	69,20.	19,40
Napoli	45,0.	41,0
Napoli	55,10.	38,0
Napthali	73,0.	34,30
Narbona	30,20.	43,20
Narch	119,30.	30,40
Nardenborg	47,10.	67,50
Narſinga	119,0.	18,0
Narua	56,10.	60,0
Naſeph	110,30.	43,0
Nata	290,40.	7.30
Natam	177,10.	15,0
Natolia reg.	66,0.	41,0
Nauaca	300,20.	17,10
Nauiaſi	277, 10.	14,10
Nazaret	72,40.	34,10
Nebio	38,30.	42,30
Neffaon	42,15.	30,0
Negru	173,0.	30,40
Neijna	300,30.	2,20
Neli	57,50.	2,20. 2
Nerpis	45,30.	62,50
Neſta	35,0.	28,10
Netra	42,30.	65,30
Neunox	57,0.	64,20
Newcaſtle	23,10.	55,20
Nicarea	59,30.	39,30
Nicobar In.	130,30	16,40
Nicoia	284,30.	10,40
Nicomedia	63,30.	44,20
Nicopolis	56,30.	45,0
Nieflot	57,50,	59,50
Nil	22,10.	10,30

	Long.	Lat.
Nilnes	98,40,	58,30
Nilus fl.	67,20.	32,0
Ninus	82,20.	37,0
Niſa	36,10.	44,0
Niſabul	102,10.	38,40
Niſabul	105,0.	34,30
Niſcha	57,30.	58,30
Niſui	79,40,	56,0
Niſſa	45,30.	50,30
Niſſa	52,20.	44,30
Nito	285,10.	12,0
Niues	318,40.	16,20
Noe mons	81,0.	40,20
Norbate	88,0.	17,10
Noion	30,0,	49,20
Nombre de dios	294,30.	9,20
Nomedalen	33,30.	65,30
Normar	38,0,	61,20
Norombega	315,40.	43,40
Norwegia	35,0,	62,0
Notium pr.	171,0.	47,0
Noua	59,50.	9,20 a
Nouogradec	57,10.	53,0
Nougrod	65,30.	52,40
Nowgorod	62,50.	60,30
Nowgorod	80,0.	55,20
Nuba palus	53,0.	17,20
Nubia reg.	57,0.	13,0
Nubia op.	60,0.	17,40
Nubia fl.	57,0.	15,40
La Nublada	240,20.	18,30
Nucano	138,0.	9,30
Der Nues	31,0.	57,30
Nurnberg	39,30	49,30

O

OBy fl.	107,0,	60,0
Occa fl.	77,30.	55,40
Ochelaſa	306,20.	48,30
Odeſchiria	116,0.	13,20
Odia	138,30.	12,0
Odnief	71,30.	52,30
Oechardes fl.	134.20.	58,0
Olant	43,30.	57,0
Ofleron	24,30.	45,30
Olone	24,30.	47,0
Omagua reg.	310,0.	9,0. a
Omba	54,10.	66,50
Omedon	27,0.	6,40
Omot	64,30.	19,30
Onega fl.	56,40.	64,0
Onegaburg	59,30.	62,30
Onem	28,20.	34,30
Onor	111,40.	13,10
Oſera des Reyes	337,40.	23,40. a
Onſtea	79,40.	59,20
Oofzee	47,0.	57,0
Opakow	64,30.	53,30
Opauli	21,10.	6,0
Opin	80,20	5,40

	Long.	Lat.
Oran	29,40.	35.0
Orbadari	69,0.	17,30
Orcades	22,	10.59,0
Orellana	343,	10.3,0.a
Orgabra	73,50.	6,0
Oribow	59,10	48,30
Orixa r.	119,0.	19,0
Orixa op.	118,40.	20,40
Orleans	28,30.	48,0
Ormus Inſ. & op.	91,20.	27,30
Orſa	59,50.	54.20
Orſa	41,20.	61,30
Orpha	78,10.	35,40
Ortona	44,30.	42,40
Oſca	27,30.	42,10
Oſil	49,10.	58,30
Oſlam	63,50.	49,40
Oſteco S. Miguel de Tummã	311,30.	27,30.a
Oſties Iamaons	98,0.	3,30.a
Otinangiuel	68,30.	43,20
Otronto	49,30.	40,20
Otupe	293,50.	7,0.a
Oumare	80,30.	6,0
Oxford	24,0.	52,0
Oxus fl	107,0.	41, 20
Oya r.	75,0.	13,0

P

	Long.	Lat.
PAam	138,20.	2,50
Paca	302,50.	31,10.a
Pacem	132,0.	4,0
Pagam	177,40.	18,0
Paganſa	99,50.	45,0
Paiale	241,50.	31,20
Paito	290,30.	5,10.a
Palage	14,0.	18,0
Palagoſa	47,30.	43,0
Palanduræ Inſulæ	108,0.	11,0
Palatia	60,50.	39,20
Paleacate	118,20.	13,40
Paliace	155,40.	32,0
Pallu	80,20.	37,30
Palma	6,20.	28,0
Palmar Rio.	273,30.	26,40
Palona	105,10.	2,0.a
Pamer	120,0.	41,0
Pampalona	24,30.	42,40
Panairuca	145,40.	8,30.a
Panama	394,30.	8,10
Panaſſa	138,50.	23,50
Pandan	121,50.	30,10
Pantanalia	42,50.	36,30
Panuco	270,10	22,20
Paquippe	306,0.	34,40
Paraſan	112,20.	37,50
Pari	282,30.	9,30

Paria

	Long.	Lat.
Paria	317,20.	6,40
Pariban	136,20.	7,50.a
Paris	29,25.	48,30
Parma	39.20.	45,10
Paſcar	59,40.	1,20.a
Paſcherti	94,40.	58,0
Paſir	105,20.	24,30
Paſſan	41,50.	48,40
Paſto	304,0.	11,40.a
Poſtoco	297,50.	0,0.a
Patane	138,10.	6,50
Patanis	99,10.	25,0
Pateniſſi	109,0.	20,40
Patrona	163,30	6,50.a
Pauia	37,50.	46,10
Pazanſu	136,20.	31,0
Pazanſu	155,30.	54,50
Pazer	134,20.	3,20.a
Pechora	66,50.	67,0
Pechora caſtle	73,50.	64,50
Pedir	131,10.	4,0
Peſora	47,40.	65,40
Pegu r.op.	135,0,	20,10
Peim reg.	132,0.	51,30
Peim op.	132,50.	50,30
Penaçote	119,30.	18,30
Penda	74,10.	5,20.a
Pendaua	118,40.	30,10
Perche	145,0.	26,50
Perflaul	72,0.	56,30
Perigo	323,10.	43,20
Periperi	137,40.	11,20
Pernou	53,30.	58,40
Peru reg.	296,0.	10,0.a
Peruſia	42,20,	43,10
Peſcara	34,30,	30,10
Petatlan	257,0.	28,40
Petepoli	118,20.	12,0
Pharacon	133,30.	29,20
Philippinæ In.	158,0.	15,0
Piader	91,30.	25,0
Pico	356,40.	38,20
Picora reg.	317,0.	19,0.a
Picora op	316,40.	9,30.a
Las Piedras	296,40.	4,0.a
Pigmea	148,40.	32,0
Pijnsko	55,0.	52,0
Pilingu	144,20.	40,0
Pina	296,20.	3,0
Pinegle	131,20.	52,30
Pinego	61,10.	64,30
Pinga	301,40.	14,20.a
Piramide	173,10.	20,20
Piſa	40,30.	43,40
Piſacua	302,0.	24,40.a
Pizan	73,0.	51,30
Placentia	20,40.	40,0
Las Plagas	251,30.	32,10
Plaia	45,20.	21,0.a
Plaia	331,50.	31,20.a
Plaia	63,30.	24,30.a
Plaias	273,20.	26,0

	Long.	Lat.
Plaia de lagunas	45,40.	25,0.a
Plata	315,0.	19,50.a
Plescow	59,10.	59,0
Plimought	21,10.	50,50
Plingu	144,20.	40,0
Ploosko	48,10.	52,40
Plotzco	57,30	57,40
Pochant	141,0.	26,30
Podenpasay	303,0.	45,0
Podolia reg	59,0.	49,30
Poicters	26,30.	47,20
Polonia reg.	53,0.	50,0
Pannoy	58,40.	67,30
Pontanay	74,30.	20,10.a
Ponte viedro	17,20.	42,40
Popaia	297,30.	1,50
Poparopo Inf.	128,40.	16,30
Poroguiman	304.30.	45,0
buen Porto	177,30.	2,0.a
Puer.agosto	298,20.	53,0.a
P. de Baldiuia	296,10.	36,30.a
P.de Canoas	239,20.	36.40
P.de Cauallos	283,0	14,20
P. de Chili	300,20.	31,0.a
Por.de la Concepuion	45,40.	24,20.a
P.Desier	313,0.	47,40.a
P.Escondo	157,40.	17,10
P.Famin	302,50.	53,10.a
P,Fremo	44.0.	4,0.a
P.del Gado	42,10.	3,50
Por.de Gaspar Rico	189,30.	3,40.a
Porto hondo	286,0.	29,0
Po.S.Iuliano	310,0.	50,0.a
P.de S. Lazaro	45.30.	12,20,a
P.de los Leones,	318,20.	42,30.a
P.de S.Miguel	240,30.	35,0
Puerto de la misericordia	296,20.	53,0.a
Po.de Nauidad	264,0.	21,30
P.de Negrillo	296,50.	17,10
P.de Paxaro	157,20.	16,20
P.port	17,30.	41,10
P.de puerto	254,0.	31,30
P.de Quintero	300,30.	32,10.a
P.Real	21,30.	36,40
Po de los Reyes	244,0.	28,40
P,de don Rodrico	333,0.	28,0.a

Por.

	Long.	Lat.
Por.Salido	186,40.	3,0.a
P.Santo	10,0.	32,30
P.de Sardinas	238,50.	37,0
Po.de Iuan Serrano	311,0.	47,40.a
P.de Velas	280,30.	12,0
P.S.Vincente	337,20.	23,50.a
P.de Xalisco	260,40.	24,10
Posilles	325,30.	54,40
Posession	241,30.	32,20
Postna	45,10.	52,30
potantr	51,40.	40,50
potiwlo	67,0.	52,0
potocalma	299,30.	35,0.a
potossi	315,10.	21,10.a
poueada	116,10.	10,0.a
poyossa	96,0.	93,0
pracada	147,20.	8,10.a
prag	42,30.	50,0
preslau	45,10.	51,10
preslaw	49,40.	49,45
primsberg	48,30.	55,10
proinay	75,20.	71,0
pr.terræ Austr.	13,0.	42,0.a
prussia reg.	50,0.	54,0
przebors	48,30.	50,50
ptolamais	66,40.	29,40
puchio	296,0.	6,50,a
pulobarea	135,50.	2,0.a
pulisangan fl.	158,40.	54,0
punto de Cayneca	48,30.	32,40.a
punto del Gada	85,50.	11,0
pun.de la Galera	295,40.	40,0.a
pun.de S.Helena	290,10.	2,10.a
pun.de S.Helena	325,20.	37,30.a
pun.de S.Lucas	252,30.	23,30
pun.de S.Maria	60,30.	29,0.a
punto primero de Nauidad	58,30.	31,0.a
puripegam	120,20.	21,40
puy	31,10.	45,0
puza	86,30.	25,0

Q

Qvanzu	157,30.	44,10
Quara	59,0.	10,50.a
Queda	135,20.	6,40
Quelinsu	158,30.	36,0
Queples	41,20.	37,40
Queroa	134,0.	10,10
Quesibi	88,20.	24,30
Quiam fl.	139,0.	54,0
Quiansu	144,40.	42,30

Quicare

	Long.	Lat.
Quicare Inſ.	290,0.	6,20
Quicuri	287,30.	12,0
Quilca	298,50.	16,30.a
Los Quillacinga	299,20.	0,30
Quiloa r.op.	69,50.	8,50.a
Quinecho	268,50.	26,0
Quintete	303,40.	34,40.a
Quinzai	153,0.	40,0
Quiſes	308,40.	18,30
Quitaieno Inſ.	353,40.	1,40.a
Quitainano	291,30.	14,0
Quiticui	54,40.	22,10.a
Quito	293,10.	0,10
Quiriminiao	144,0.	6,0.a
Quiuira r.	240,0.	42,0
Quiuira op.	233,0.	41,40

R

RAb	47,15.	47,40
Rabon	74,0.	23,50
Raguſi	49,30.	44,0
Raia	153,20.	7,30.a
Raige	79,10.	28,0
Ramat	74,10.	33,50
Rameſes	68,30.	30,30
Rane	352,40.	62,40
Ranos Inſ.	299,20.	26,0
Raptũ prom.	72,10.	19,30.a
Raraſſa	118,30.	26,0
Raſain	81,50.	32,40
Raſamuzes	26,20.	30,20
Raſt	91,0.	39,30
Rauel	110,30.	20,40
Rauenna	42,20.	44,20
Rauora	92,0.	59,0
Razer	88,30.	28,40
Real	22,30.	39,0
Redonda	193,10.	4,30.a
Regil	82,10.	36,30
Renus	31,0.	49,0
Reue	51,30.	60,0
Reuen	114,30.	45,0
Rey	94,40.	37,10
Rezon	74,0.	54,30
Rhabana	169,30.	47,0
Rhezo	47,0.	38,20
Rhodus	61,40.	37,20
Rianrech	94,40.	40,0
Ribadeo	19,20.	43,20
Riffa	66,40.	21,20
Riga	53,30.	58,0
R.del Ancon	335,0.	26,0.a
R.de S,Andres	178,10.	2,30.a
R.S.Antone	70,0.	14,10.a
R.Aoripana	337,	10.2,0.a
R.de Arboledas	331,40.	1,40
R.de S,Auguſtino	350,0.	15,30.a

R.de

	Long.	Lat.
R.de S.Augustino	183,	10.2,30.a
R.de S.Barbara	326,	40.34,0.a
Rio de la Barca	321,	40 5,0
R.de Barques	322,	10.48,20
R. del Brasil	348,	20.17,10a
R.de la Buelta	306,	0.38,50
R.de la Buelta	325,	20. 3,40
R.de las Bueltas	31,	30.6,0
Rio de Buguli	15,	0. 9,0
R.de los Camarones	42,	0.5,30
R.de Camarones	315,	0.44,30 a
R.del Campo	42,	30.2,50
R.de la Canele	306,	30.3,30 a
Rio de Cano	298,	40.33,10
R.de Carandia	322,	10,35,0.a
R.Catamagna	322,	0,33,20,a
R.de Chiriguana	303,	30.27,0,a
R.de Cinoloa	258,	30.30,0
R.de la Crux	308,	40.49,40.a
R.de Culpare	340,	30.23,0.a
R.Dangla	42,	30.1,40
R.Doce	345,	20.19, 10
Rio Dolce	320,	0, 6,0
R.Dulce	316,	30.52,0
R.de S. Domingo	353,	0.7,50 a
R.del Estremo	340,	40.22,30.a
R.de Flores	287,	20. 29,0
Rio de Fones	304,	0.48,0
R.de S.Francisco	351,	40.10,0,a
R.del Gado	34,	20.6,20
R.del Canelo	342,	10.22,40.a
R.de Gigantes	278,	30,29,0
R.Grande	301,	10.11,0
R.Grande	314,	30.44,0
R.del Guato	284,	30,29,30
R, de Gungun	348,	30. 13,10.a
R.de la Hacha	304,	15. 10,40
R.de S. Hieronymo	183,	40.3,0.a
R.de S.Helena	348,	40.16,30.a
R.Hondo	199,	0. 52,10.a

R.Hondo 318,50.41,50
Rio del Infante 40,40.5,30
R.de Infante 55,0.30,30.a
R.de S.Iuan 45,40.14,40.a
R.de S.Iuan nauidad 287,30.30,0
R.de laguana 326,30.12,0a
R.de laguna 55,10.32,50.a
R.S.Laurens 318,10.53,0
R.de Lepeti 323,30.30,0.a
Rio de Liampo 158,0.29,0
Rio de Limara 299,0,6,0,a
R.de Manicongo 48,20.10,0,a
R.de Mecoretas 320,0.31,10,a
R.de Medano 283,50.29,30
R.de S. Mondego 46,20.9,20,a
R.de Montagnas 319,40.42,20
Rio de Naguin 157,30.30,30
R.Negro 324,40.32,10.a
R.de la Notitia 316,0.14,10.a
Rio de S.Olalla 301,10.7,40.a
R.del oro 10,20.22,30
Rio de Paiamino 298,0.5,0.a
R.de Palmas 272,10.14,20
R.Panuco 271,50.22,30
Gran Rio de Parana 321,20.5,0.a
R.de Paſcua 334,50.6,30.a
R.de lo Peleijo 321,30.43,0
Rio de Perla 292,30.29,0
R.de Perus 318,30.42,0
R.de peſcadores 331,20, 3,10
R.de peſcadores 277,30,28,0
Rio peti 318,0.29,30.a
R.de pindado 157,33.18,20
R.de la plata 326,30.36,0a
R.de S.polo 337,0.32,20,a
R.de praia arrecifes 316,0,41,20
R.primero 327,40.45,0
Rio de los Reyes 60,0.29,0,a
R.Roque 351,40.4,10.a
R.de Salo 335,40.24,30,a
R.S.Saluador 326,10.33,0a
R.Saluador 170.7,0
R.Santo 300,30.3,0.a
Rio ſeco 295,30.31,30
R.ſeco

	Long.	Lat.
R.seco	293,50.	30,30
R.de serrano	311,0.	47,40 a
R.de sp.santo	281,30.	31,0
R.del sp.santo	60,0.	27,30.a
R.de Teraiayon	318,0.	27,40.a
R.de Tison	253,0.	36,30
R.de los Topoios	335,40.	12,0.a
R.de turme	77,0.	24,40,a
R.Verde	321,10,	5,20
R.Verde	289,0.	30,30
R.de Vincente	323,40.	4,40
R.Visto	319,40.	42,20
The white Riuer	308,10.	51, 20. a
Ripon	35,30.	55,20
Risan	91,30.	47,0
Roan	27,40.	48,50
Roca	311,0.	11,10
Roca partida	248,0,	19,0
Roncador	294,30.	13,30
Rochelle	25,30.	46,40
Rodhe	36,20.	64,50
Rosain	150,	30.48,40
Roma	42,30.	42,0
Romana	107,40,	42,10
Los Romeros	98,40,	28,30.a
Roolwick	40,20.	54,0
Ropaga	60,40.	5,30.a
Roquelay	314,10.	50,0
Rossa	38,10.	39,0
Rostoue	72.10,	57,0
Roswic	38,20.	55,20
Ruenea	58,20,	19,40.a
Rugen	40,20,	55,10
Russia	57,30.	59,30
Rust	34,10,	67,30
Rye	27,30.	51,0
Rygalli	331,40,	31,0.a

S

SAba	317,30,	17,20
Sabain	68,20.	8,40
Sabarza	154,50.	45,0
Sabia	60,40.	23,40
Sablestan reg.	114,0,	34.0
Sablon	333,50.	53,50
Sabron	84,50.	45,10
Sabrata	43,30.	29,50
Sacabo	71,20.	28,30
Sachadi	85,50.	22,0
Sachi	113,10	42,20
Sachaflacus	52,0,	17,0.a
Sachion	135,50.	56,30
Sacolche	68,0.	15,10
Sacole	69,30.	19,0
Saendebar	174,40.	35,50
Saepam	176,30,	14,0
Sagatin	95,30.	58,20

	Long.	Lat.
Sala	20,20.	33,30
Sala	89,40.	48.0
Salamanca	20,30.	40,50
Salane	63,10.	13,40
Salasta	72,40.	41,50
Salata	76,0.	24,30
Salebrena	24,50.	37,30
Salina	45,0,	38,30
Salinas de Trenot	321,40.	53,0
Salsburg.	42,0	48,20
Salsipodes	288,40.	15,40
Salstom	32,20.	62,0
Saluado	321,20.	5,0
Samain	111,0,	46,30
Samma	51,0.	65,0
Samara	118,30,	8,10
Samarchan	130,20.	47,40
Samarchant	109,0.	44,0
Samaria	72,20.	33,40
Samirent	90,50.	35,30
Samot	51,20.	28,0.a
Sana	84,40.	17,50
Sana	70,30.	23,40
Sanbicasas	78,0.	12,40.a
Sandace	69,20.	18,0
Sandersons tower	320,0.	65,30
Hope Sand.	326,20.	72,40
Sandri	162,50.	53,0
Saguenay fl.	306,40.	55,0
Sanguin	160,20.	41,20
Sanoltol	350,0.	62,0
Sanson	20,40.	43,20
Santari	73,40.	17,0
Sante	294,40.	9,30.a
S.Apolonia	82,30.	21,40.a
S.Barnardo	328,40.	12,30
S.Barnardo	181, 20.	23,20
S.Barnardo	319,50.	17,0
S.Bartolomeo	319,10.	17.50
S.Catarina In.	308,20.	17,0
S.Catharina	292,50.	12,10
S.Christophero	318,30.	16,40
S.Christoual	291,20.	22,20
S.Christoual	306,30.	38,0
S.Croce	4,0.	1,0.a
S.Croce	3,50.	1,0.a
S.Crux	314,15.	16,0
S.Crux	334,20	43,30
S.Cruz de la Siena	318,	10.17,20.a
S.Dauids	20,0.	52.0
S.Domingo	307,	10.17,50
S.Espirito	322,30.	31,20.a
S.Espirito	75,40.	13,50.a
S.Francisco	87,0,	7,0.a
S.Frãcisco	326,20.	24,40.a
S.Francisco	255,0.	31,50
S.Frãcisco	335,20.	26,10.a

	Long.	Lat.
S.George	357,10.	39,0
S.Helena	24,30.	16,0.a
S.Hieronymo	181,30,	24,0
S.Hieroms Riuer	302,10.	53,10.a
Santiago	264,30.	20,30
Santiago	298,10.	32,10
S.Iago	175,30.	2,0.a
Santiago	3,20,	14,30
S.Iuan	171,30.	6,20
S.Ian de Luz	25,10.	43,20
S.Iuan de Lua	273,20.	19,40
S.Lazaro	71,0.	10,20.a
S.Lucar	21,20.	37,10
S.Lucia	1,0.	17,0
S.Lucia	319,50.	12,40
S. Malo	24,20,	48,50
S.Maria	82,30.	17,0.a
S.Maria	240,40.	34,20
S.Maria	0,30,	36,0
S.Maria	356,0.	18,30.a
S.Maria	85,0.	44,30
S.Maria de Nazaret	66,30.	16,30
S.Martha	301,20.	10,40
S.Martin	321,10.	51,0
S.Martin In.	293,40.	46,50a
S.Martin	319,10.	17,10
S.Matheo	21,10.	1,50.a
S.Michel	60,50.	65,30
S.Miguel	327,20.	47,20
S.Miguel	291,40.	6,10.a
S.Miguel	268,0,	24,0
S.Miguel	249,0.	32,50
S.Nicolas	69,0.	64,0
S.Nicholas	323,20.	53,40
S.Nicholas	2,0.	17,0
S.Petro	64,30.	1,30
S.Pol	330,40.	47,20
S.Pol de Lyon	20,40.	48,40
S.Samson	306,30.	40,30
S.Vincent	0,30.	17,30
S.Vincente	318,40,	11,50
S.Vues	17, 30.	38,30
Todos Santos	319,10.	14,50
Todos Santos	350,30,	12,50.a
Sanx pouan	75,30.	14,40.a
La Saona	309,0.	16,50
Sapom Inf.	107,10.	0,30
Sarachi	84,30.	44,10
Saragosa	26,10.	41,50
Saragua	64,0.	9,0
Saraiatzik	87,10.	48,30
Sardinia	39,0.	40,0
Sargora	54,30.	15,20.a
Sargora	137,40.	40,0
Sari	97,30.	37,40
Sartan	84,0.	14,40

Sata

	Long.	Lat.		Long.	Lat.
Sata	72,50.	25,40	serent	97,10,	29,0
Satyrorũ Inſ.	174,10.	46,30	serneri	103,30.	35,0
Saua	81,10.	18,40	serneri reg.	106,30.	33,30
Sauatopoli	75,30,	47,0	seroponow	115,40.	59,20
Saun	115,20.	47,20	serra	158,20.	49,10
Saura	84,40.	31,20	serra liona	15,30.	7,40
Scampi	51,50.	42,0	Serras de S. Eſperitu		
Scanga	119,30,	26,0		42,30.	1,50.a
Scarbrough	24,50.	54,30	serta	62,0,	26,50
Scarpanto	62,10.	36,0	seruan	90,20.	39,45
Scierno	145,15.	28,0	seu deſertum	52,0.	14,30
Sciro	57,30.	41,10	shabogliſhar	83,40	56,30
Schotland	25,0.	60,0	shakaskik	91,30.	53,0
Schwitenes	28,50,	59,0	shensk	68,40.	61,50
Scoſna	75,40.	52,0	skalholt	8,30.	65,20
Scotia r.	20,0.	57,0	sian	139,10.	14,30
Scudo	291,0,	9,0	siao	160,50.	3,30
Scylazo	47,40.	39,20	siarant	118,20.	30,0
Secotán	304,50.	34,30	sibaccha	50,0.	28,40
Segedein	49,0.	47,10	sibier r. op.	99,20.	59,30
segn nueſtra Inſ			sibilia	22,0.	35,50
	293,30.	46,20.a	sicby montes	115,0.	58,30
Seleſer	135,50.	33,20	sicilia	45,0.	37,30
selg	111,50.	48,0	sidal	75,30.	22,0
Semes	19,30.	48,20	sidon	72,10.	36,30
semon	95.40.	38,10	Sierras de Penedall		
senega reg.	13,0.	24,0		47,20.	30,40.a
senega fl.	12,30.	11,30	sierra neuada	298,0.	49,0.a
septa	22,0.	35,40	siete herman.	170,0.	9,30
seretus	118,50.	28,50	sigeſmel lacus	41,0.	11,30
sereng	105,30.	27,50	sigiſtan r.	105,0.	31,0

	Long.	Lat.
simiſo	69,10.	44,20
sina	70,0.	41,40
sinai mons	75,0.	30,0
sind	109,30.	27,0
sindacui	165,10.	55,40
sindam	99,0.	32,20
sindiufu	142,10.	44,0
singa	60,30.	3,50.a
singin	147,10.	41,40
singui	155,30.	55,30
singui	149,30.	38,30
singuimatu	155,30.	48,10
siminan	106,30.	45,30
sinus Barbaricus	74,0.	4,0.a
sinus S. Laurentij	325,0.	49,0
sinus Mexicanus	280,0.	26.0
sinus Perſicus	85,0.	29,0
sione	59,10.	12,40
sipanto	45	30.41,50
siquiſita	312,40.	19,50.a
sirach	87,20	42,10
siras	90,40.	30,40
sire	46,30.	12,30
sirgiam	95,10.	29,40
siſſam Inſ.	106,20.	1,20
siſtan	105	30.28,40
slaba	55,50.	58,40
slauonia	47,0.	45,0
slowoda	68,20.	64,30
slowoda	86,30.	58,50
slutzk	59,0.	52,35
smacatlan	270,50.	16,40
smirna	60,20.	40,30
snauel	2,30.	64,20
sobaha	63,10.	16,10
socbaſi fl.	108,0.	48,50
soghgi	143,20.	50,20
sohar	92,30.	23,50
solangi reg.	139,0.	50,0
solidea	14,15.	11,0
soloski	55,0.	64,30
soltania	92,40.	37,20
soram	86,50.	35,40
sorand	351,40.	61,0
sorlings	18,0.	50,0
soſa	61,0.	1,30
soſſa fl.	108,30.	64,30
soſtan	117,40.	28,0
spaam	96,50.	33,30
spakado	46,50.	45,20
spartiuento	47,30.	38,0
spier	35,30.	49,20
spina	60,50.	43,30
spicia	39,50.	44,30
stachene	118,50.	32,40
staci	94,0.	30,40
stad	30,40.	61,40
stadin fl.	306,20.	50,0
staianſu	147,50.	42,0

	Long.	Lat.
Stagira	55,30.	43,30
stampalio	59,50.	36,40
staphole	2,20.	65,40
starabat	99,40.	41,20
starigur	44,40.	69,10
stecborg	42,30.	58,50
stetin	42,10.	53,50
stobi	52,30.	44,30
stocholm	42,0.	58,10
stoka	57,50.	48,30
stolp	45,30.	55,30
stora	35,50.	35,40
stormesent	30,0.	59,40
storuita	135,10.	37,10
Straigh. of Matuchin	74,30.	73,10
Straun	84,30.	43,30
strelna	79,40.	61,10
streltze	79,40.	62,0
strupuli cast.	95,10.	62,20
suachem	72,40.	18,40
suastus fl.	119,20.	35,0
sua zino	51,10.	40,30
subao	153,50.	10,0.a
succuir	143,10.	56,0
suedia reg.	40,0.	60,0
suetinos	57,0.	68,30
suffetula	39,20.	32,40
suguan	69,30.	26,40
sumatra Inſ.	134,0.	0,0
sunda	138,0.	6,40.a
supa	156,30.	1,10.2
sus	87,30.	34,3
suſaca	73,40.	48,0
suſdal	74,20.	56,40
sweſt	64,50.	52,10
swinburne head	25,0.	59,50
syr	90,30.	21,30
syria	74,0.	36,0
syracuſæ	45,40.	37,0
syrtis maior	48,30.	29,30
syrtis minor	43,10.	32,10

T

TAbaco	322,10.	10,40
Tacan	152,20.	48,50
Tacine	37,40.	26,0
Tachnin fl.	125,50.	62,0
Tacomiguo	72,40.	4,0.a
Tadelis	33,50.	35,20
Tadinfu	156,20.	49,40
Tagaranto	143,30.	2,20
Tagaza	18,40.	22,0
Taguima In.	154,30.	5,20
Taiapura	142,30.	1,50
Taigin	149,10.	61,50
Taingu	152,0.	63,30
Taiombara	144,20.	4,0
Taiompura	145,50.	1,30
Taiona	59,30.	53,30
Talabora	312,0.	26,30.a

	Long.	Lat.
Talao	161,0.	4,20
Talca	98,10.	42,30
Talcar	85,0.	47,0
Tamaco	270,15.	24,40
Tamasa	75,30.	46,0
Tambof	15,30.	27,10
Tamos pr.	174,30.	50,30
Tana	135,10.	15,30
Tanamaibu	109,30.	18,10
Tanchit	114,10.	48,20
Tanes	30,50.	35,20
Tapasipa	275,0.	15,20
Tapuri mõtes	113.0,	53,20
Tarama	301,15.	13,15.2
Taranto	48,0.	40,30
Tarapaca	306,20,	30,40.2
Tarbacan	109,30.	34,50
Targa reg.	32,0.	25,0
Targa op.	31,20.	23,40
Tarnassar	119,40.	17,10
Tarragona	29,30.	40,40
Tarso	71,20.	40,0
Tartaho	162,40.	38,40
Tartar	152,0,	63,20
Tartaria reg.	130,0	62,0
Tasan	132,30.	36,20
Tasica	66,40.	22,10
Taskent reg,	129,0,	49,0
Taskent op.	126,0,	50,15
Taste	308,40,	9,10
Tatracan	55,0,	44,50
Tauasco	273,40.	18,20
Tauais	108,40.	42,20
Tauay	135,10.	15,30
Taueste	49 20	63,30
Tauilla	18,10.	37,20
Tauris	90,30.	38,10
Taxila	121,40.	34,50
Tebeld	41,10.	10,10
Tebilbelt	23,10.	29,30
Techna a fl.	68,0.	7,20.2
Techort	35,50.	27,10
Tefethne	16,10.	30,0
Tega	47,20.	25,30
Tegoram		30,0
Teguat	27,40.	28,10
Teient	17,0	30,30
Tellin	13,30.	54,40
Temican	20,50.	8,30
Tenariffe	18,10.	27,30
Tenduc op	168,30.	57,30
Tenduc reg.	170,0.	59,0
Tenesab	46,50.	51,10
Tenlech	17,0.	31,0
Teorregu	48,50.	25,0
Tequandela	303,10.	49,0
Tercera	358,20.	39,0
Terenate	160,40.	1,20
Terra alta	160,30.	6,40.2
Terra alta	45,20,	15,20
Terra de los fumos	322,30	40,20.2

	Long.	Lat.
Terra de Humos	348,40.	1,30.a
Primera Terra	172,10.	0,30.a
Terra de S. Vincente	346,40.	2,0.a
Tarsis	115,20.	49,0
Tesebit	27,30.	30,0
Thessalonica	53,40.	44,20
Thesset reg. op.	20,0.	29,10
Testigos	316,10.	11,0
Teusar	37,30.	27,10
Texir	11,30.	22,30
Tezerin	24,50.	30,40
Tezzen	43,40,	26,0
Thebet reg.	138,50.	45,0
Thebet op.	138,50.	44,0
Thene	79,20.	37,40
Tholoman	144,20.	40,0
Tholouse	28,40,	43,50
Thomebamba	293,40.	1,50.a
Thunis	67,40.	32,0
Thialso	49,40	22,40.a
Tidore	160,40.	0,40
Tigramahon	65,0.	6,0
Tigris fl.	84,0.	34,30
Timitri	133,10.	49,20
Timocham	108,50.	28,20
Tinazen	70,0.	13,0
Tingui	155,0.	43,0
Tinoca	166,0.	32,0
Tinzu	164,0.	48,40
Tipura	131,10.	28,10
Tiquisana	305,20.	16,0.a
Tirna	47,0.	49,0
Tisrich	95,30.	28,10
Titicacha lacus	308,30.	18,0.a
Tochtepec	274,40.	19,0
Tocros	54,50.	46,0
Tosian	13,20.	29,0
Togora	146,0.	49,50
Tokel	4,20.	64,0
Toledo	22,20.	39,40
Tollon	34,50.	43,20
Tolometa	53,0.	31,30
Tombuto	20,50.	15,0
Toram	134,30.	7,0
Torn	47,0.	53,10
Toropetz	62,40.	57,50
Tortosa	29,30.	40,30
Tortuga	303,50.	20,20
Tortugas	312,20.	10,40
Tosalis	143,40,	37,30
Toronteac	248,20.	36,0
Toul.	33,10,	49,10
Toure	27,30.	47,50
Trabuco	56,30.	31,30
Tranom Inf.	107,10.	1,20
Tranooch	34,20,	67,50
Trapam	43,30.	37,30

	Long.	Lat.
Trapicari	305,10.	7,0.a
Trebizonda	74,30.	44,40
Tremizen	29,0.	34,10
Trent	40,10.	46,10
Treta	68,0.	37,20
Treuia	20,10.	7,40
Triago Inſ.	278,40.	21,0
Tribanta	63,30,	41,50
Tricalamata	120,10.	7,30
Trier	34,10,	49,50
Trieſte	44,10.	46,10
Trin	36,30.	45,40
Trinidad	355,20.	19,10.a
Trinidad	295,50.	21,20
Trinidad	319,20,	9,0
Trinitie harbor	308,30.	36,0
Tripolis antiqua	44,20.	30,20
Tripoli de Barbaria	45,20.	30,30
Tripolis Soriæ	72,20.	37,0
Troia	59,0.	42,30
Troy	31,0.	48.10
Tuat	29,0.	28,30
Tuban	154,10.	5,40.a
Tucare	32,20.	7,0
Tucca	38,10.	33,20
Tucken	51,30.	57,40
Tueſa	[illegible]1,	15.18,0
Tugaſar	16,40.	14,30
Tuia	82,50.	52,0
Tulla	72,0.	53,20
Tumbes	291,40.	4,10.a
Tumboblanco	294,0.	3,0,a
Tumena	90,50.	29,30
Tumiſa	84,10.	24,0
Tuna	41,50.	64,30
Tunci	72,10.	9,40
Tunis r.op.	40,0.	36,0
Turbet	99,50.	34,0
Turcheſtan reg.	110,0.	47,0
Turſon	131,30.	56,30
Turris lapidea mons	125,0.	47,0
Turſes	103,40.	34,0
Turſis	103,40.	37,30
Turumbala	76,20.	24,50.a
Turega	17,0.	16,30
Twer	68,10.	57,10
Tybi	91,50.	19,40
Tyrus	71,35.	35,30
Tzercas	79,50.	49,20

V

VAdi	54,40.	16,0.a
Vahulicz	90,40.	60,50
Vaigirmale	119,0.	18,0
Vaigui	150,50.	39,0
Val Parayſo	300,0.	33,0.a

	Long.	Lat.		Long.	Lat.
Valderas	251,50.	22,30	Videpski	59,0.	57,0
Valentia	29,20.	39,40	Vienna	45,30.	48,30
Valunta	56,0.	27,50.a	Vigangara	80,40.	14,40.a
Vamba fl.	49,40.	5,0.a	Villac	48,0.	46,50
Van	86,30.	36,50	Villa longa	28,20.	7,40
Vangue	48,40.	8,50	Ville Conde	17,30.	41.30
Var	120,30.	22,40	Vilna	54,30.	55,0
Varcano	107,50.	39,0	Vindius mons	124,0.	28,0
Varon	83,30.	70,30	Virgines	178,40.	1,20
Varta	46,50.	51,40	Virginia	302,0.	36,0
Vaſianar	75,40.	49,0	Viſſigrod	61,30.	51,30
Vaſtan	85,10.	36,50	Bona Viſta	4,30.	15,30
Vaſten	39,30.	59,50	Buena Viſta	308,40.	40,10
Vatacaba	53,40.	12,30.a	Buena Viſta	177,30.	13,30
Vaygath Inſ.	81,30.	69,20	Viterbo	41,50.	42,40
Vban	96,50.	32,0	Vkkil	53,10.	57,0
Vche	110,40.	31,30	Vllae	242,10.	30,30
Vekelax	54,20.	62,0	Vllao	240,30.	21,0
Veneriæ	41,40.	45,50	Vlm	37,50.	48,50
Vella	77,0.	18,0	Vocam	116,8.	39,0
Verdiſo	59,50.	45,0	Vociam	128,0.	40,0
Verdun	32,10.	49,20	Volga fl.	75,40.	58,0
Verma r.	133,0.	21,30	Vpſalia	42,50.	60,0
Verma op.	130,20.	20,10	Vque	60,40.	6,40.a
Verona	40,40.	45,50	Vraba	297,20.	7,50
Vertoplate	130,30.	1,30.a	Vraba	285,30.	10,40
Veſgire	116,20.	41,30	Vrcamia	23,50.	46,0
Vguin	161,10.	39,20	Vrcos	301,0.	14,50.a
Viana	17,30.	42,0	Vrdubar	90,30.	37,0
Viatca	87,50.	59,30	Vrgis fl.	85,50.	53,20
Vich	81,40.	53,50	Vriſtigna	38,40.	39,40

	Long. Lat.
Vsargala mons	32,50. 27,0
Vstiga	43,15. 39,0
Vstiug	79,30.61,30
Vstuzna	67,0.59,20
Vtual	42,40.62,50
Waersbergen	39,0.57,30
Wardhuys	50,30.70,30
E. Warwickes foreland	323,10.62,0
Coun. Warwicks sound	330,40.64,40
Wassilgorod	81,50.56,40
Woxen	49,20.52,30
Weimought	23,50.51,0
Welichi	96,30.56,0
Weliki poyassa	101,20.63,30
Weliki cumen	95,40.56,20
Welisz	63,40.56,50
Weroy	36,50.68,40
Wesel	31,30.51,30
Westerhol	40,30.67,40
Whitbe	24,30.55,0
Wiborgh	56,30.62,35
Wiesma	67,30.55,0
Wight	25,10.50,30
Sir Hugh Willowbies land	55,0.75,0
Winterton	27,20.53,30
Wiuerus	18,40.43,40
Wococan	307,30.34.0
Wologda	73,50.59,30
Wologda	74,30.60,0
Wolok	68,30.55,50
X	
XAiel	85,30.15,40
Xandu	168,40.55,40
Xanes	311,30.11,0
xaques	282,0.20,30
xara	130,0.17,0
xibuar	116,0.46,30
xiuxa	301,30.12,0,a
xumete	304,20.23,0
Y	
YErmouth	27,30.53,0
Yorck	23,30.54,30
Yuagua	303,30.21,0
Yuchçope	22,50.56,30
Z	
ZAbe	67,20.5,30,a
Zacabedera	140,40.13,10
Zacana fl.	60,40.13,0,a
Zacatula	269,40. 20,0
Zachabirtenduc	165,10.58,30
Zachet	76,40.6,0

Zacotora

	Long.	Lat.		Long.	Lat.
Zacotora Inſ. & op.	88,0.	12,50	zeila	80,0.	11,0
Zagatay	105.0.	45,0	zembere lac.	55,0.	11,30 a
Zahaſpa	101,20.	42,30	Noua zemla	83,30.	74,0
Zahu	141,20.	28,0	zengian	158,20.	37,20
Zaiton	157,30	28,0	zerigo	56,0.	36,0
Zalines	51,50.	58,30	zerzer	79,0.	17,50
Zama	49,30.	14,0 a	zet	53,0.	17,10 a
Zama	74,40.	11,40	zibit	70,0.	22,20
Zambere fl.	55,0	19,10 a	zigeck	45,50.	40,50
Zamfara	41,0.	16,0	zigide	55,0.	10,40
Zamilla	89,0.	28,20	zil	115,0.	15,0
Zanhaga reg.	20,0.	24,0	zimbaos	59,0.	25,20 a
Zanzibar	73,50.	6,30 a	zimbro	50,50.	22,40
Zaphalonia	52,0.	38,30	zingis	76,10.	49,30
Zara	46,25.	45,40	zito	107,10.	30,10
Zaradrus fl.	125,0.	94,0	ziz	27,0.	26,30
Zardadain	143,10.	32,20	zodaha	143,30.	8,20 a
Zarim	135,40.	14,40	zodiala	57,50.	4,0 a
Zauan	41,30.	50,0	zoidalanel	137,30.	3,50 a
Zazela	81,40.	7,40	zophal	64,20.	29,30 a
zebeng	138,40.	35,40	zoquila	58,30.	2,10
zebil mons	47,0.	17,0 a	zuenziga r.	25,0.	25,0
zedica	48,0.	29,30	zuiatzko	85,20.	56,0
zegzeg r. op.	36,40.	14,40	zunbal	39,30.	37,30

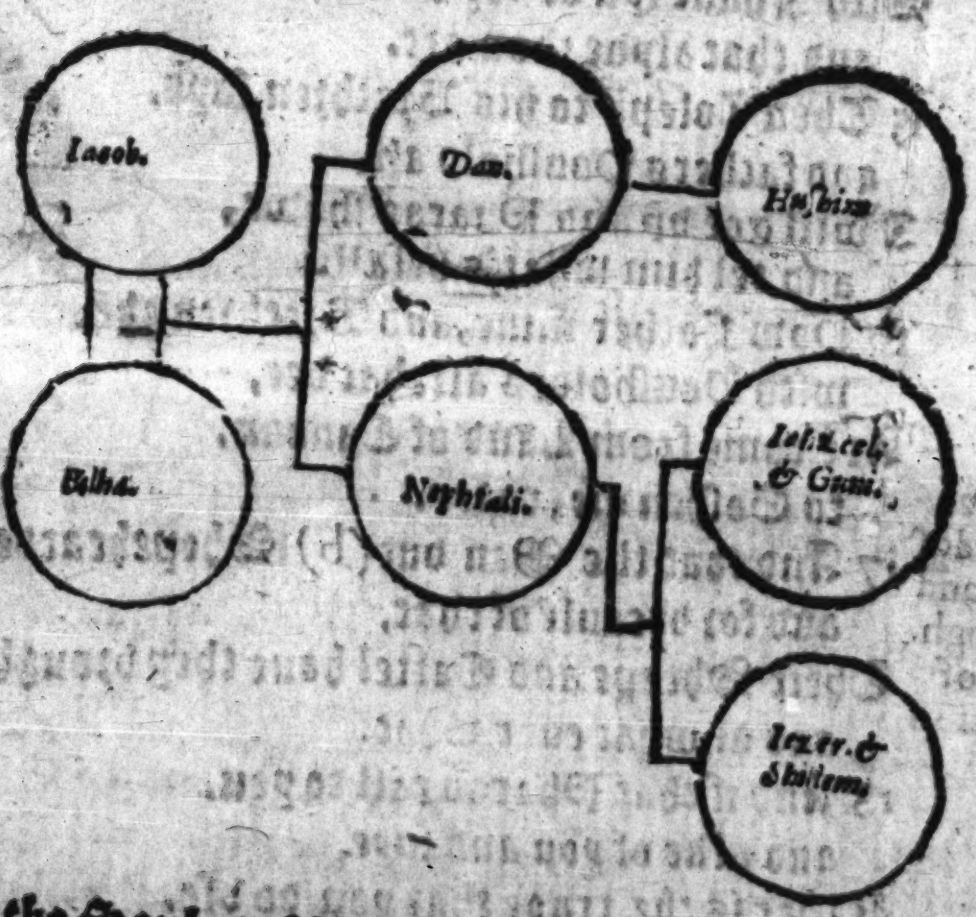
FINIS.

Errata quæ operarum incuria *magna noſtra moleſtia obrepſerunt ſic corrigantur.* Prior numerus paginam, ſequentes *verſum indicant.*

Pag.5,li.7 lege *opponitur*,*cum*.p.6.l.22.lege *vt tota*. pa.8.l.26.dele *ſi*. p.12 l.9,lege *qui*. p.17,l.12.lege *deprimitur*.16.lege *vicinjores ſunt*,*&c*.pag.28.lin.18 & 19, lege *Neq; enim Hipparchus Arato antiquior* cætera dele. 20. lege *initio*. 21.lege *Olympiadum*. pag. 31.l.18.lege *diaboli*. pag.32.l.17.lege *habet*.p.33,l.10. *Algeuze* p.35.l.11.lege *hoc*. p.39.l. 9.& 10.lege *vnicum*. p.41,l.2.*meridiem*. p.41,l.17. *Scythicum*.pag.42.l.13,*Strabone*.14,*meridiem*. p. 42.l.8,*inconcinnum*.p.43,l.1,*vt vt*.13.*Groenlandiã* 14.*India*.25,& 26,*maritimam*.p.47.l.23. *Borealiſſimam*.p.48.9.*ſatis*.p.51,l.7,*arbitrantur*.9.*at ſtadiorum* p.52,l.8.*aberrantem*. p.53.l.14. *Strabone*. p. 54,l.1, *Strabo*.p.57,l.4.lege 300000. l.9. *tribuunt*.pa. 62,l.28,*antomata*.p.64,l.20,*Anglia*, 20, & 21.*latitudinis*.p.66,l.8,*conſequenter*. p.69,l.19, *latitudo*. p.70,l.23,*traditis*.p.71,l.15 & 16,*horizonte*.p.83,l.1. *vel Auſtrino* 14,*magnetica*.18,*interſectione*.pag. 86,l.vlt.*prolixius*.p.97.l.25.*inueniantur*. p.105.l.22. *circulos*.p.109,l.1,*inueneris*.p.112,l.7,*promontoriorum*. Ad marginem vel oram hæc corrige. pag.14. *verticales*.ibid.pro quadruus,lege *quadrans*. p.18. pro intemperata,lege *intemperata*.pa.24.*de ſtellis*. p.43.lege *Peucer*,*de dimenſ*.*terra*.

Were in the whole Syrtie and Sixe,
as wel perceiue you may,
Besides the wiues of Iacobs Sonnes,
of whom wee nothing saye.
Two Sonnes in Egipt Ioseph had
that borne were vnto him,
Manasseh was the first of twaine,
the younger Ephraim.

And these the Sonnes of Bilha were,
whom Laban, as is sayd,
Did geeue to Rabel Daughter his,
to be her waighting Mayde.



So all the Soules of Iacobs House,
which into Egipt past,
In number are three Score and Tenne,
from first vnto the last.

11 Then Iacob, Iudah sent before
to Ioseph in the way,
Hym to (a) direct to Goshen Land
where in they made their stay,
12 Then Ioseph readye made himselfe.
his Chariot eke also,
And vp to Goshen Land hee went,
his Father for to know.
13 To whom hee did himselfe present.
and on his Necke did fall,
Whereon hee wept a good long space
to comfort of them all.
14 Then Israel to Ioseph sayd,
now let my lyfe depart,
Sith I haue lyu'de thy Face to see,
and that alyue thou art.
15 Then Ioseph to his Brethren sayd,
and fathers Housholo all,
I will goe vp and Pharao shewe,
and tel him what's befall.
16 How Father mine, and Brethren eke,
with Housholdes all that bee,
Are come from Land of Canaan,
to Goshen me, to see.
17 And that the Men but (b) Shepehearues are,
and for because of that,
Their Sheepe and Cattel haue they brought
and al what euer what.
18 And if that Pharao call to you,
and aske of you and saye,
What is the trade that you do vse,
or how spend you the Daye?
19 Then shal you say: thy Seruauntes are,
as Fathers them before.
In tending Cattel occupied,
euer tyme that we were borne.

(a) or to prepare him selfe a place.

(b) Hee was not ashamed of his Father and kinred though they were of base condicion